21614
18751
7669

AUGUST 24, 1940

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. VIII. OF VOL. II., 1940. LONDON, SATURDAY, AUGUST 24, 1940. Pp. 72—Price 1s.
No. 6104. VOL. CCXXXIX. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully illustrated. £3 3s. net.
"No praise is too high for the author of this great book. It must be considered as the standard work on thyroid disease. Its pages summarise all that is known of this most interesting subject at the present day."—WEST LONDON MEDICAL JOURNAL.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

ANATOMY IN THE LIVING MODEL.
By DAVID WATERSTON, M.A., M.D., F.R.C.S.E., F.R.S.E.,
Bute Professor of Anatomy at the University of St. Andrews.
276 pages. 74 Illustrations. 16 Coloured Plates. Price 15s. net; postage 9d.
"... can be read and re-read by the student, general practitioner, the surgeon and physician."
—ST. BARTHOLOMEW'S HOSP. JOUR.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

9 Plates and 135 Text Illustrations. 15s. net; postage 6d.
DISEASES OF THE EAR, THROAT AND NOSE.
By J. DOUGLAS McLAGGAN, F.R.C.S. Eng. and Edin.
London: H. K. Lewis & Co. Ltd., 136, Gower-street, W.C.1.

AN AYLESBURY BROADSIDE
Now Ready. From all Booksellers. Price 3d.
Setting out, from the medical standpoint, the grounds, social, economic and physiological, for the immediate grant of family allowances on a national scale.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

3rd Ed., fully revised, 852 pp., 816 Illustrations.
EMERGENCY SURGERY. 50s. net; postage 8d.
By HAMILTON BAILEY, F.R.C.S.
Bristol: John Wright & Sons Ltd. London: Simpkin Marshall Ltd.

PROBLEMS OF ANÆSTHESIA IN GENERAL PRACTICE.
By D. H. LUKIS, M.D., B.S.Lond.,
Late Hon. Anæsthetist, South London Hospital; late Clinical Assistant, Ear, Nose, and Throat Department, Queen's Hospital for Children; Hon. Medical Officer, Kingston Victoria Hospital.
Demy 8vo. 7s. 6d. net (postage extra). 158 + vi pages.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

PROGNOSIS. VOLS. ONE AND TWO
Price 10s. 6d. each net (postage 7d. each extra).
Companion Volumes to the "Modern Technique in Treatment" and "Clinical Interpretation of Aids to Diagnosis" Series.
The 124 articles of the series have been collected in book form in two volumes, which are fully indexed under titles, authors, and broadly classified into groups to facilitate quick reference.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

Second Edition. Pp. 190 + viii. 6s. net. Recently Published.
PRINCIPLES OF MEDICAL STATISTICS
By A. BRADFORD HILL, D.Sc., Ph.D.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

URINARY SURGERY.
A Handbook for the General Practitioner.
By W. K. IRWIN, M.D., F.R.C.S.
Surgeon, St. Paul's Hospital for Genito-Urinary Diseases.
"Clearly written...furnishes the practitioner with information of great practical value in his everyday work."—BRIT. MED. JOUR.
SECOND EDITION. REVISED AND ENLARGED.
Price 10s. 6d. (postage 6d.)
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

RADIOTHERAPY IN THE DISEASES OF WOMEN.
By MALCOLM DONALDSON, B.A. (Cantab.), F.R.C.S. (Eng.), M.B., Ch.B. (Cantab.)
Physician Accoucheur with Charge of Out-patients, St. Bartholomew's Hospital; Consulting Gynecologist, Royal Northern Hospital, &c.
Demy 8vo. 148 pages. 11 Illustrations in the Text; 2 Plates, one in Colour. Price 7s. 6d. net; postage 7d.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

2nd Edn. 490 pp. 14 Plates. 297 Illus. 30s. net; post. 8d.
CYSTOSCOPY AND UROGRAPHY.
By JAS. B. MACALPINE, F.R.C.S.
"A credit to British surgery."—BRIT. JNL. OF SURGERY.
Bristol: John Wright & Sons Ltd. London: Simpkin Marshall Ltd.

In Two Volumes. SELECTED WRITINGS OF
JOHN HUGHLINGS JACKSON,
M.D., F.R.C.P., F.R.S.
I.—EPILEPSY AND EPILEPTIFORM CONVULSIONS.
II.—EVOLUTION AND DISSOLUTION OF THE NERVOUS SYSTEM: SPEECH: VARIOUS PAPERS: ADDRESSES AND LECTURES.
Edited by JAMES TAYLOR, M.D., F.R.C.P.
With the advice and assistance of GORDON HOLMES, M.D., F.R.C.P., and F. M. R. WALSHE, M.D., F.R.C.P.
Over 500 pages in each vol. Price 25s. net each; postage extra (inland 9d., abroad 10d.).
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

Free to the Medical Profession on request. Cloth bound Ed. 5s.
ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO."
A Symposium on Prosthetic Achievement.
Pp. 72. 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co., Ltd., 7, Roehampton House, Roehampton, S.W.15.

Pp. 328 + xii. 12s. 6d. net.
INTRODUCTION TO
DISEASES OF THE CHEST.
By JAMES MAXWELL, M.D. (Lond.), F.R.C.P. (Lond.).
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

THE CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.
Vols. I and II. Price 10s. 6d. each. Postage extra.
Volume I.—"Each of the 45 Sections included in the book is contributed by an experienced worker. . . ."
Volume II.—"We may say that the success of the first volume is here repeated. . . ."—BRITISH MEDICAL JOURNAL.
"Physicians and surgeons cannot afford to omit the knowledge here outlined. . . ."—BIRMINGHAM MEDICAL REVIEW.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

TWO NEW BOOKS

JULY, 1940
Surgery of the Hand
By R. M. HANDFIELD JONES, M.C., M.S., F.R.C.S.
Surgeon to Out-patients, St. Mary's Hospital, London.
Royal Medium 8vo. 150 pages. 95 Illustrations, several in colour. 15s. net, postage 7d.
¶ Invaluable to the practitioner or surgeon in industrial areas.

SEPTEMBER, 1940
Diseases of the Nervous System
By F. M. R. WALSHE, O.B.E., M.D., D.Sc., F.R.C.P.
Physician in charge of the Neurological Department, University College Hospital, London.
Extra Demy 8vo. 304 pages. 12s. 6d. net, postage 8d.
¶ Deals simply and clearly with diagnostic methods and treatment from the practitioner's point of view.

Prospectuses free on request
E. & S. LIVINGSTONE, 16-17, Teviot Place, Edinburgh

LIBRARY OF CONGRESS OCT -8 1940 PERIODICAL DIV

PHENOLAINE EYE DROPS

For the treatment of conjunctivitis, painful and tired eyes and pink eye, also for the relief of eye strain

Phenolaine is antiseptic and anæsthetic, so that the conjunctiva is not only rendered insensitive but the infecting organism is also destroyed

Samples obtainable from—

THE PHENOLAINE COMPANY, 34, WOODLAND WAY, WEST WICKHAM, KENT

(*Regd. Office*: 59, Brewer Street, Piccadilly, W.1) Springpark 4949

Specially designed for use in the treatment of **Pneumonia, Bronchitis, Pleurisy** *and similar affections of the Chest and Lungs.*

Made from the superfine grade of "Gamgee" tissue, made exclusively by Robinsons of Chesterfield and reputed as the finest dressing for use in Thermal treatment. Invented by, and prepared exactly according to the direction of the late Sampson Gamgee, F.R.S.E., Consulting Surgeon to the Queen's Hospital, Birmingham. Made in six sizes. 9½d. to 3/-. Obtainable from all Chemists.

"Gamgee Tissue" REGD. TRADE MARK

PNEUMONIA JACKET

SOLE PROPRIETORS & MANUFACTURERS: ROBINSON & SONS LTD. OF CHESTERFIELD & 168 OLD ST., LONDON, E.C.1

Valentine's Meat-Juice

"For a Tired Stomach"

IN Dyspepsia, Catarrh of the Stomach or Intestines, or Gastric Irritability from any cause, when the Digestive Organs reject milk and other foods, Valentine's Meat-Juice will be Retained and demonstrate its Power to Restore and Strengthen.

It is in constant use in Hospital and Private Practice and endorsed by eminent Medical Men.

Physicians are invited to send for Clinical Reports.

For Sale by European and American Chemists and Druggists

VALENTINE'S MEAT-JUICE COMPANY
RICHMOND, VIRGINIA, U.S.A.

JB 92

AUGUST 24, 1940

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6104 LONDON: SATURDAY, AUGUST 24, 1940 CCXXXIX

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Experimental Study of Blast Injuries to the Lungs. By S. ZUCKERMAN, M.R.C.S. (*illus.*).. 219

Effects of High-explosive Blast on the Lungs. By Surg. Lt.-Comm. D. M. DEAN, M.B., Surg. Comm. A. R. THOMAS, B.Chir., and Surg. Comm. R. S. ALLISON, F.R.C.P. (*illus.*) 224

Penicillin as a Chemotherapeutic Agent. By E. CHAIN, Ph.D., Prof. H. W. FLOREY, M.B., Prof. A. D. GARDNER, D.M., N. G. HEATLEY, Ph.D., M. A. JENNINGS, B.M., J. ORR-EWING, B.M., and A. G. SANDERS, M.B. 226

Meningococcal Meningitis Starting as Diabetic Coma. By CECIL W. WARD, M.B., and ALBERT A. DRIVER, M.B. (*with chart*) 228

Locking Wrist. By L. S. MICHAELIS, M.D..... 229

Effect of Venesection on the Capacity of the Lungs. By E. M. GLASER, M.D., and J. MCMICHAEL, M.D. (*with chart*)..... 230

SPECIAL ARTICLES

The Birth of Social Psychiatry. By EDWARD GLOVER, M.D..... 239

Convocation Comes to Life 239

Scotland: Gas Warfare .. 240

An Irish Hospitals Sweepstake 240

LEADING ARTICLES

DOCTORS IN INDUSTRY 233

IMMUNITY TO DRUGS..... 234

AUTHORITY, OBSERVATION AND EXPERIMENT..... 235

BLAST INJURIES OF THE LUNGS..... 235

ANNOTATIONS

Penicillin 236

A Campaign of Defence.... 236

Psychiatric View of National Behaviour..... 237

Abacterial Pyuria 237

Chelsea Physic Garden.... 237

The Polio Virus..... 238

Anæsthesia and the Carotid Body 238

REVIEWS OF BOOKS

Casualty Training and Organisation: Administration of Civil Defence Casualty Services. By G. B. Shirlaw, L.R.C.P. 231

Official History of the Australian Army Medical Services in the War of 1914–18: The Western Front. By Col. A. G. Butler, M.B..... 232

Dynamics of Inflammation. By Valy Menkin..... 232

Surgery of the Alimentary Tract. By Sir Hugh Devine, M.S. 232

Surgical Anatomy. By Grant Massie, F.R.C.S... 232

Notes on Clinical Laboratory Methods..... 232

Starch and its Derivatives. By J. A. Radley, M.Sc... 232

LETTERS TO THE EDITOR

Whole-time Factory Doctors (Dr. Ronald E. Lane) 246

Negatol (Mr. Oswald Lloyd, F.R.C.S.) 246

British Children in America (Dr. Edwin P. Jordan).. 246

Industrial Tuberculosis (Dr. H. B. Morgan, M.P.).... 246

Estimation of Prothrombin (Miss F. C. G. Hobson, and Prof. L. J. Witts, F.R.C.P.) 247

Abdominal Rigidity (Dr. T. Stacey Wilson)..... 248

The French Collapse (Dr. Robert Coope)..... 248

A Reinforced Loaf (Dr. I. Harris, Sir Ernest Graham-Little, M.P., F.R.C.P., Dr. F. Prescott, Dr. Franklin Bicknell).. 248

After Images (Dr. F. Edridge-Green) 249

Treatment of Burns (Mr. A. J. Hobson, F.R.C.S.) 249

Antiscorbutic Values (Prof. V. H. Mottram)..... 250

Sulphathiazole in Gonorrhœa (Dr. A. H. Harkness) 250

Guillotine Amputations (Mr. R. Watson-Jones, F.R.C.S.) 250

PUBLIC HEALTH

Feeding as a Function of Education—Points from School Reports 241

Infectious Disease in England and Wales 241

OBITUARY

Prof. William Russell, F.R.C.P.E. (*with portrait*) 251

Dr. Charles Sampson..... 251

PARLIAMENT

Prevention of War Injuries by Protective Devices .. 243

From the Press Gallery: The Purchase Tax—Tuberculin — Summer Recess 243

Question Time: War-time Bread — Milk — Communal Feeding—Surgical Mobile Units—Pay of R.A.M.C. Officers—Bysinosis—Shell Shock—Vagrants — Spectacles Exempt from Purchase Tax 244

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents 242

MEDICAL NEWS

Queen's University of Belfast 250

British Postgraduate Medical School..... 250

Naval Honours..... 250

Prisoners of War..... 250

Study of Infectious Diseases 250

University of London..... 252

Guide to Medical Students 238

Index to THE LANCET, Vol. I, 1940 238

NOTICES

Memorandum on Wound Shock 251

Crime, Weather and Alcohol 252

New Spanish Journal..... 252

Prescription of Potassium Salts 252

Christian's Syndrome 252

A.B. Brand Delay Insulin 245

Births, Marriages and Deaths — Appointments 252

12/6 net

INTRODUCTION TO

DISEASES OF THE CHEST

12/6 net

By

JAMES MAXWELL, M.D. (Lond.), F.R.C.P. (Lond.)

Assistant Physician and Demonstrator of Practical Medicine, St. Bartholomew's Hospital; Physician, Royal Chest Hospital; Consulting Physician, Royal National Sanatorium, Bournemouth

Demy 8vo 328 + xii Pages 37 Chapters with 95 Illustrations

HODDER & STOUGHTON LTD. 20, WARWICK SQUARE, E.C.4

WRIGHT'S PUBLICATION

JUST ISSUED

Twelfth Edition. Fully Revised and Enlarged.
607 pp. 8½ × 5½ in. 482 Illustrations (several coloured) with Frontispiece. 21s. net; postage 7d.

Pye's Surgical Handicraft

Edited by HAMILTON BAILEY, F.R.C.S.
With the Collaboration of 38 Contributors

A manual of surgical manipulations, minor surgery, and other matters connected with the work of house surgeons and surgical dressers.

Press Opinions of the Eleventh Edition

"In its new form it is likely to become the cherished possession of a new generation of active surgical practitioners."—*The Lancet.*

"This new edition should maintain the popularity of a well-established work."—*British Medical Journal.*

BRISTOL: JOHN WRIGHT & SONS LTD.
LONDON: SIMPKIN MARSHALL LTD.

An Aylesbury Broadside

the LANCET says:

Children must be fed

Family Allowances

Now Ready Price 8d. From all booksellers or Hodder & Stoughton Ltd., Warwick Sq., London, E.C.4

Principles of Medical Statistics

BY

A. BRADFORD HILL, D.Sc., Ph.D.

Reader in Epidemiology and Vital Statistics in the University of London (London School of Hygiene and Tropical Medicine); Fellow and Member of the Council of the Royal Statistical Society

Second Edition **Demy 8vo, 190 + VIII.** **Price 6/- net**

CONTENTS

CHAP.
I. THE AIM OF THE STATISTICAL METHOD
II. SELECTION
III. PRESENTATION OF STATISTICS
IV. THE VARIABILITY OF OBSERVATIONS
V. CALCULATION OF THE STANDARD DEVIATION
VI. PROBLEMS OF SAMPLING: AVERAGES
VII. FURTHER PROBLEMS OF SAMPLING: PROPORTIONS
VIII. FURTHER PROBLEMS OF SAMPLING: DIFFERENCES
IX. FURTHER PROBLEMS OF SAMPLING: χ^2
X. FURTHER EXAMPLES AND DISCUSSION OF χ^2
XI. THE COEFFICIENT OF CORRELATION
XII. CALCULATION OF THE CORRELATION COEFFICIENT
XIII. LIFE TABLES AND SURVIVAL AFTER TREATMENT
XIV. COMMON FALLACIES AND DIFFICULTIES
XV. FURTHER FALLACIES AND DIFFICULTIES
XVI. FURTHER FALLACIES AND DIFFICULTIES
XVII. CALCULATION OF STANDARDISED DEATH-RATES
XVIII. GENERAL SUMMARY AND CONCLUSIONS
DEFINITIONS
INDEX

Published by THE LANCET LTD., 7 Adam Street, Adelphi, London, W.C.2

Model AE in extreme Trendelenburg position, tilt 75°. The shoulder rests are adjustable in both directions.

ST. BARTHOLOMEW'S HOSPITAL OPERATION TABLE

Latest Improvements include

Easy-to-operate Release Lever for lowering the table; Trendelenburg position increased to 75° tilt; Foot-operated rubber-covered Floor Brake, and rubber-tyred wheels fitted with self-oiling bearings.

The St. Bartholomew's Hospital Operation Table is now manufactured in five different models and thus supplies a range of modern operation tables embodying the latest ideas of well-known surgeons for carrying out surgical operations.

All models can be supplied with either tripod or platform base.

Prices from £75 + 10%

Over 1200 of these tables are in use at home and abroad.

A descriptive booklet, fully illustrated, will be sent on request.

ALLEN & HANBURYS LTD., LONDON, E.2

Manufacturers of Surgical Instruments and Appliances, Sterilized Surgical Sutures, Hospital Furniture and Electro-Medical Apparatus.

Showrooms: 48, Wigmore Street, W.1

RECOMMENDED BY DIETITIANS AS A GOOD DIGESTIVE AND SOURCE OF ENERGY

MACVITA

A crisp and nourishing product of English Wheat!

MADE ONLY BY McVITIE AND PRICE

For
RELIABILITY
in Surgical and Orthopædic Appliances

SEND YOUR PATIENTS TO

ALLEN & HANBURYS LTD
48, WIGMORE ST. LONDON, W.1
TELEPHONE WELBECK 8005 (4 lines)
TELEGRAMS ORTHOPEDIC, WESDO, LONDON

GLANOID

ANTI-MENORRHAGIC FACTOR "GLANULES"

AMPLE SUPPLIES ARE NOW AVAILABLE OF THIS NEWLY DEMONSTRATED ACTIVE FRACTION OF MAMMALIAN LIVER.

CLINICAL RESEARCH HAS REVEALED THAT THE OUTSTANDING ACTION OF THIS FRACTION IS THAT OF CHECKING THE FUNCTIONAL UTERINE HÆMORRHAGE OF MENORRHAGIA AND METRORRHAGIA.

SUPPLIED IN BOTTLES OF 25, 50, & 100 "GLANULES"

Write for Literature to :— THE Armour Laboratories
ARMOUR AND COMPANY, LTD.
ARMOUR HOUSE • ST. MARTINS-LE-GRAND • LONDON • E.C.1

Telephone: NATIONAL 2424

Telegrams: "ARMOSATA-CENT" LONDON

The Pharmacological Chlorophyll Preparation

compounded according to the formula
and under the direction of

E. BUERGI, M.D.

Professor of Medicine at the University of Berne

'PHYLLOSAN'

BRAND OF CHLOROPHYLL TABLETS

For the treatment of
Hardening Arteries, Abnormal Blood Pressure
Cardiac Weakness, Physical Decline
Debility, Neurasthenia, Anaemia

"'Phyllosan' has been before the profession now for fifteen years and has stood the test of time, and the developments indicated point to still greater usefulness for this product in the future."

Vide THE PRESCRIBER, Jan., 1938

A Pamphlet entitled
"Hyperpiesia, Metabolic Disorders, and the Anaemias"
giving laboratory and clinical reports supporting the new Therapy instituted by Professor Buergi will be sent to medical practitioners on request.

NATURAL CHEMICALS LTD., ST. HELENS, LANCASHIRE

Florida Canned Grapefruit and Grapefruit Juice
and Surgical Disease

In surgery, anæsthesia lowers the vitamin content of the organism and causes acidosis. The administration of Florida Canned Grapefruit and Grapefruit Juice in quantities during the 24-48 hours preceding anæsthesia combats this tendency by providing Vitamin C and easily assimilable sugars, and by producing a final alkaline reaction in the body due to its potential alkalinity of 45 c.c. N/10 alkali per 100 c.c. juice.

Florida Canned Grapefruit also shares with other citrus fruits the effect of lessening post-operative nausea and depression, and it assists in the repair of wounds by supplying an abundance of Vitamin C, which is necessary for the production of granulation tissue.

Careful investigations have revealed that, contrary to general belief, this valuable vitamin is not destroyed by the canning process. Florida Canned Grapefruit has the additional advantage of low cost. The human organism requires approximately 30 mgm. of Vitamin C daily. At present prices, the cost of the Florida Canned Grapefruit necessary to supply this amount averages just over 1d. a day.

The attractive sharp flavour of Florida Canned Grapefruit facilitates its administration before operation, and stimulates the appetite during convalescence. A book entitled "Citrus Fruits and Health," dealing with this and other dietary uses of citrus fruits has been prepared by the Florida Citrus Commission and is available to the Medical Profession on application to the Florida Citrus Commission, c/o T. B. Browne Ltd., 163, Queen Victoria Street, London, E.C.4.

FLORIDA CANNED *Grapefruit and Grapefruit Juice*

Issued by
THE FLORIDA CITRUS COMMISSION
Lakeland, Florida, U.S.A.

In the presence of blood

it is a marked property of 'Dettol' that it maintains high germicidal efficiency when blood or pus is present—even in considerable quantity. The value in emergency of this modern antiseptic—which can be used rapidly without danger, discomfort or staining—is now everywhere acknowledged.

Sold by Chemists and Medical Suppliers in bottles, 1'-, 1'9, 3'-, 5'- and 7'6, and in larger sizes for Medical and Hospital use. These prices do not apply in Eire or Overseas. Full information on request.

'DETTOL TRADE MARK
The Modern Antiseptic

RECKITT & SONS, HULL & LONDON. (PHARMACEUTICAL DEPT., HULL)

DEHYDROCHOLIN B.D.H.

In Dehydrocholin B.D.H. the powerful cholagogue dehydrocholic acid is available in tablets for oral use and in solution (in the form of its sodium salt) for parenteral administration.

Dehydrocholin B.D.H. is primarily indicated in the treatment of all conditions attributable to biliary insufficiency, in cholangitis, cholecystitis, hepatic cirrhosis and uncomplicated cholelithiasis.

The widespread pharmacological action of Dehydrocholin B.D.H. renders it of value, however, in numerous other conditions commonly encountered in practice. It is used for the relief of atonic constipation; it possesses marked diuretic properties and is employed in the correction of portal œdema, particularly when associated with hepatic congestion. Further, in common with other bile acids it promotes emulsification of fats and facilitates their absorption; it is, therefore, of value in conditions associated with steatorrhœa. In addition, the protection afforded to the liver by Dehydrocholin B.D.H. may be utilised as a means of reducing the toxic reactions to arsphenamine derivatives and gold salts.

A descriptive booklet will be sent to any physician on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Dhyd/E/1

food and health

The importance of ensuring a well-balanced diet for everyone cannot now be overestimated. Such a diet must contain an adequate proportion of protective foods providing the essential vitamins and mineral salts. Even partial vitamin deficiency is responsible for subnormal health and development, leading to increased susceptibility to disease.

All the constituents of the vitamin B complex are present in Marmite, which is particularly rich in nicotinic acid (64 mg./100 g.). In addition it has a high phosphorus content (1890 mg./100 g.) and possesses useful anti-anæmic properties.

A diet planned for the attainment and maintenance of good health should therefore include Marmite.

MARMITE

Jars: 1-oz. 6d., 2-oz. 10d., 4-oz. 1/6, 8-oz. 2/6, 16-oz. 4/6
Special terms for packs for hospitals and welfare centres.

Sample and literature on request from THE MARMITE FOOD EXTRACT CO. LTD., 35, Seething Lane, London, E.C.3

408

MEDICAL EVANS PRODUCTS

Peptic Ulceration and Hyperacidity

NOVASORB

(Brand of Magnesium Trisilicate)

is of proven value

NOVASORB possesses distinct advantages over the common alkaline powders. Its action is more prolonged, there is no formation of gas in the stomach—neither is there any risk of alkalosis resulting from its administration.

NOVASORB does not interfere with peristaltic function beyond exerting a slight laxative effect in certain cases.

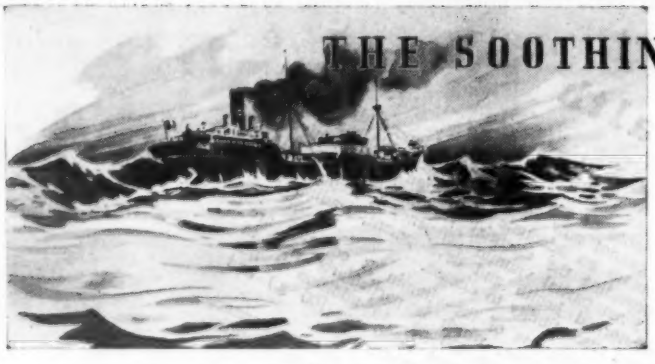
Issued as follows :

Powder—Bottles of : 2-oz. 1/9, 4-oz. 2/9, 8-oz. 5/–, 16-oz. 9/–, 5-lb. 36/– each bottle
Tablets of 20 grains—Tins of : 20 1/6, 48 2/3, 250 9/6 each tin

Samples will be sent on application to Home Medical Dept., Hanover St., Liverpool

Made in England by

Evans Sons Lescher & Webb Ltd.
Liverpool and London



THE SOOTHING EFFECT OF OIL

The adhesive properties of the oily base in 'Endrine' enable the active medicaments to maintain contact with the nasal mucosa for an appreciable time. Furthermore the oil contents have a soothing effect on inflamed mucous surfaces.

'ENDRINE'

BRAND NASAL COMPOUND Regd.

Samples on Request

JOHN WYETH & BROTHER LTD., 25, OLDHILL PLACE, LONDON, N.16

Sole Distributors for Petrolagar Laboratories Ltd.

TRADE MARK 'ENTORAL' BRAND

Oral Cold Vaccine

● 'Entoral' has been subjected to careful clinical investigation among industrial and institutional groups, office workers, and school children. Increase of species-specific and species-broad (heterophile) immunity to the secondary pathogens of the upper respiratory tract by its use has decreased at least 60 percent the incidence of colds in the vaccinated units and has controlled the severity, duration, and disability of infections in persons not completely protected.

Vaccination with 'Entoral' involves the administration of a single capsule of the vaccine daily for one week, followed by one capsule twice a week throughout the period when upper respiratory infections are prevalent. Immunization should be repeated annually.

'Entoral' brand oral cold vaccine is supplied in bottles of 20 and 60 'Pulvules' brand filled capsules.

ELI LILLY AND COMPANY LIMITED
BASINGSTOKE AND LONDON

TIN THERAPY

STANIFORM BRAND TABLETS

(METHYL STANNIC IODIDE)

ARE SOLUBLE

In **STANIFORM TABLETS,** the tin, which is in combination with a Methyl Radicle and Iodine, is immediately soluble and therefore differs conspicuously from other tin preparations in use. These tablets are readily assimilated and their therapeutic action is rapid. Invaluable in all cases of staphylococcal infection.

Manufactured by :—

WHIFFEN & SONS LTD., Carnwath Road, Fulham, LONDON, S.W.6

An Important Advance in Infant Feeding

A Booklet

explaining in detail the "Veguva" System of Infant Feeding, together with clinical trial samples of "Veguva" Foods, will be sent on request.

A. WANDER LIMITED,
184 Queen's Gate, London, S.W.7.

Laboratories, Works and Farms:
King's Langley, Hertfordshire.

Branches: CANADA: Peterborough, Ont. AUSTRALIA: 1 York Street North, Sydney. NEW ZEALAND: Maritime Buildings, Custom House Quay, Wellington. SOUTH AFRICA: P.O. Box 597, Cape Town. STRAITS SETTLEMENTS: P.O. Box 660, Singapore. HONG-KONG: 18 Pedder Street. Also at Berne, Chicago, Malta, Mauritius, Colombo, Cairo, etc.

Distributing Agents:
INDIA: 16 Bank St., Fort, Bombay.

M293

IN view of the very decided advantages of the "Veguva" System of Infant Feeding over all ordinary types of milk foods, its introduction has commanded the greatest interest among specialists in infant nutrition everywhere.

The "Veguva" System comprises two scientifically balanced foods which together constitute a complete system of feeding from birth.

"Veguva" No. 1—Milk food containing vegetable and fruit juices—for infants from birth.

"Veguva" No. 2—Vegetable Adjuvant—for infants from four months.

The "Veguva" System provides the essential nutritive elements of milk plus the valuable protective properties of vegetables and fruit. Another important point is the fact that in "Veguva" No. 2 the infant is introduced to starch and cellulose quite safely at an early age, thus materially assisting the transition from a purely milk to a mixed diet.

Veguva BRAND

BABY FOODS

BOOTS SPECIAL MEDICAL PRODUCTS

Product	Composition	Indications	Dosage	Mode of Issue
BROMETHOL —BOOTS	Tribromethylalcohol in amylene hydrate.	A basal anaesthetic for rectal administration in all forms of surgical operation.	The usual dosage is 0.075 to 0.1 c.c. per kgm. body-weight in a 2½ per cent solution in distilled water. The general condition of the patient must be taken into consideration in calculating the dose.	Bromethol-Boots Bottles of 25 and 100 c.c. Congo Red Solution 1 : 1,000 (for testing Bromethol-Boots solutions). Bottles of 15 c.c.
CORVOTONE	A 25 per cent solution of pyridine-β-carboxylic acid diethylamide (also known as nicotinic acid diethylamide and nikethamide).	Cardiac and respiratory stimulant. Administered orally and by injection.	Orally: 1 to 2 c.c. in water. Subcutaneous injection: 1 to 4 c.c.	Corvotone Oral: Bottles of ½ fl. oz. and 100 c.c. Corvotone: Boxes of 5 and 6 amps. 2 c.c., and 3 amps. 5 c.c.
HEXANASTAB	Soluble Hexobarbitone. (The sodium salt of N-methyl-C:C-cyclohexenyl-methylbarbituric acid.)	For use as an intravenous anaesthetic for operations of short duration or as a preliminary to inhalation anaesthesia.	Varies considerably. May be from 1 to 5 c.c. 10 per cent solution by intravenous injection.	Hexanastab Boxes of 5 ampoules 0.5 gm., 5 and 25 ampoules 1 gm., with solvent.
HEXANASTAB —ORAL	Hexobarbitone. (N-methyl-C:C-cyclohexenylmethyl-barbituric acid.)	A rapidly excreted hypnotic with a short intensive action.	One to two tablets.	Hexanastab-Oral: Tubes of 10 tablets and bottles of 25 and 250 tablets 0.25 gm. (4 gr. approx.)

Literature sent upon request

A BOOTS PRODUCT

BOOTS PURE DRUG CO. LTD NOTTINGHAM

B550-63A

Specific indications for the use of

VITAMIN 'B'

The three most important components of the Vitamin 'B' group of vitamins are Vitamin B_1, lactoflavine (Vitamin B_2) and nicotinic acid (a precursor of the pellagra-preventing factor of the Vitamin B_2 group); all three are issued under the B.D.H. brand, and they have the following specific indications:—

VITAMIN B_1 B.D.H.		LACTOFLAVINE B.D.H.		NICOTINIC ACID B.D.H.	
Anorexia	Neuritis	Cheilosis	Pemphigus	Pellagroid Dermatoses	Ptyalism
Bradycardia	Œdema	Cataract	Photophobia	Vincent's Angina	Glossitis
Constipation		Corneal Vascularisation		Certain Psychoses	

Specific treatment with Vitamin B_1 B.D.H., Lactoflavine B.D.H. or Nicotinic Acid B.D.H., according to the particular symptoms manifested, usually brings relief. Secondary symptoms can be eliminated by the administration of Livogen.

Literature on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

VitBCom/E/421

MIST. PEPSINÆ CO. CUM BISMUTHO

(HEWLETT'S)

OVER 60 YEARS' REPUTATION

A useful remedy in DYSPEPSIA, especially when PYROSIS is a conspicuous symptom, and in all DISEASES OF THE STOMACH.

DOSE : Half to one drachm diluted.

Packed for dispensing only in 5, 10, 22, 40 and 90 oz. bottles.

Also supplied "Sine opio" when desired.

Introduced and manufactured only by

C. J. HEWLETT & SON, LTD., 35/43 Charlotte Road, London, E.C.2

VERACOLATE

Brand TABLETS

A TRUE CHOLAGOGUE

Keep the bile freely flowing —

is the watchword in gallstone diathesis. As Veracolate stimulates the production of free-flowing bile, many physicians have found it of exceptional value in the treatment as well as prophylaxis of biliary disease.

When for any reason cholesterol threatens to gain ascendency in bile, the supplementary administration of sodium glycocholate and taurocholate is a rational remedial measure. Veracolate contains these salts in adequate dosage for cholagogic effect.

Veracolate Tablets are supplied in bottles of 50, 100 and 500.

WILLIAM R. WARNER & CO., LTD., POWER ROAD, CHISWICK, LONDON, W.4.

12

INSOMNIA at the MALE CLIMACTERIC

The androgenic hormone

NEOHOMBREOL

TESTOSTERONE PROPIONATE

Medical Service Department:

ORGANON LABORATORIES LTD.

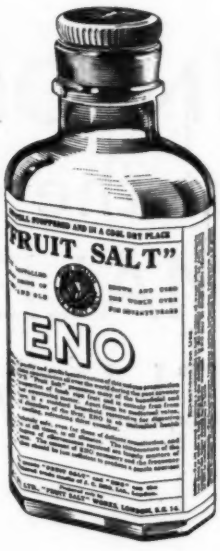
77 NEWMAN STREET, LONDON, W.1

Telephone: Museum 2857 (3 lines) *Telegrams: Menformon, Rath, London*

E. Africa: Howse & McGeorge Ltd., Nairobi, etc.
S. Africa: Heynes Mathew Ltd., P.O. Box 242, Cape Town.
Australia: F. H. Faulding & Co. Ltd.
New Zealand: Dominion Dental Supplies Ltd.
Malta: John Meli Valetta.

India: Morison, Son & Jones (India) Ltd., P.O. Box 258, Bombay.
Ceylon: Morison, Son & Jones (Ceylon) Ltd., P.O. Box 430, Colombo.
Straits Settlements: Grafton Laboratories Ltd., Singapore.

THE IDEAL EFFERVESCENT SALINE



In a recent survey on the use and abuse of aperients, a distinguished pharmacologist has written: " ***. . . that the regular daily dose of a saline purgative is in some way deleterious, is, of course, wrong. . . . A saline draught in the morning is trustworthy and rapid."***

For the prevention of constipation, and also for the relief of moderate degrees of constipation, no safer and more dependable laxative can be employed than an effervescent preparation of the high standard of ENO'S 'FRUIT SALT'. The latter has been used and prescribed by many tens of thousands of doctors for over seventy years. During this time it has acquired a well-deserved world-wide reputation for purity and efficacy.

The constituents of ENO'S 'FRUIT SALT' promote *gentle peristalsis through their Osmotic Action*, and assist the expulsion of toxins from the large intestine. The blood stream will also benefit, in that a useful portion of the dissolved salts is absorbed from the alimentary tract and slowly converted into carbonate, thus maintaining the alkalinity of the blood at a healthy level. Furthermore, a daily dose of ENO'S 'FRUIT SALT' checks any tendency to undue concentration and acidity in the renal secretions. 'FRUIT SALT' also exerts a sedative action on the gastric mucosa.

Samples and literature available on request

J. C. ENO LTD., *MEDICAL DEPARTMENT,* **GREAT WEST RD., BRENTFORD, MIDDLESEX**

MANDECAL

(Compound Calcium Mandelate B.D.H.)

Preparations of mandelic acid still have their place in the treatment of urinary infections, particularly in simple Bact. coli infections. Such infections not only yield rapidly to treatment, but reactions are reduced to a minimum, especially when the calcium salt is employed. The immiscibility (with water) of pure calcium mandelate has been entirely overcome in Mandecal (Compound Calcium Mandelate B.D.H.), an even suspension being produced at once when Mandecal is stirred with water. Further, Mandecal is pleasantly flavoured and is thus free from any properties which tend to preclude its use even during pregnancy when nausea may already be present.

Sample on request

THE BRITISH DRUG HOUSES LTD.
LONDON N.1

Telephone: Clerkenwell 3000
Telegrams: Tetradome Telex London

Mncl/E/25

THELESTRIN

Ovarian Follicular Hormone—Biologically Assayed

Stimulates the growth of the uterine muscle and endometrium

For intensive treatment of—

AMENORRHEA, MENOPAUSE
and certain types of DYSMENORRHEA

Boxes of 6 ampoules
2,000, 5,000 and 10,000 international units, in oil

G. W. CARNRICK CO., LTD.
20, Mount Pleasant Avenue, Newark, New Jersey, U.S.A.

Sole Distributors:

BROOKS & WARBURTON, LTD.
232, VAUXHALL BRIDGE ROAD, LONDON, S.W.1

The Crookes Laboratories have for many years regularly circularised the medical profession, giving them news of developments and results of the latest researches in colloidal and vitamin therapy. The Crookes Digest, an epitome of up-to-date medical and scientific information, was published in response to a general demand and was received with great appreciation among the profession.

The Crookes Laboratories now feel that, in the national interest, their extensive mailing schemes should be discontinued. They consider that in these fateful times there is place only for essentials, and a service which in peace-time proved a utility now becomes a luxury and is superfluous.

The medical profession can be assured that this step in no way alters the policy of The Crookes Laboratories, who will continue to give doctors the full and loyal service on which their goodwill has been built up throughout the years.

THE CROOKES LABORATORIES (*British Colloids Ltd.*) PARK ROYAL, LONDON, N.W.10

Telephone: Willesden 6313 (5 *lines*) *Telegrams: Collosols, Harles, London*

T.G.S.

TRADE MARK 'VAPOROLE' BRAND
SOLUTION OF
ADRENALINE
1 IN 100

Provides convenient and satisfactory treatment by oral inhalation. Easy to use. Prompt in action. Has no unpleasant side effects.

TRADE MARK 'AGLA' BRAND ATOMISER

Designed and introduced primarily for use with 'Vaporole' Solution of Adrenaline, 1 in 100. Produces an exceedingly fine spray.

In glass-stoppered bottles of 5 c.c. and 10 c.c.

Literature to Medical Men on request

BURROUGHS WELLCOME & CO., LONDON

Address for communications: SNOW HILL BUILDINGS, E.C.1

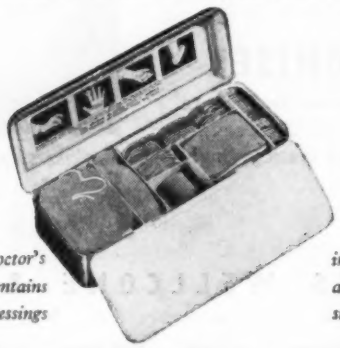
Associated Houses: NEW YORK MONTREAL SYDNEY CAPE TOWN BOMBAY SHANGHAI BUENOS AIRES

H 3918

COPYRIGHT

Wounds in awkward places

'Elastoplast' occlusive Wound Dressings will not ruck-up or become displaced in wear. They are invaluable for wounds in awkward places, such as the heel. 'Elastoplast' Wound Dressings comprise an antiseptic pad of gauze, medicated with bismuth subgallate, on the elastic adhesive 'Elastoplast' base. **For N.H.I. PRESCRIPTIONS.** 'Elastoplast' Wound Dressings, N.H.I., are available in the four specified sizes.



The 'Elastoplast' Doctor's Set, as illustrated, contains 106 *'Elastoplast' Dressings in various sizes, and is available through your usual surgical supplier at* 8/6*d.*

'ELASTOPLAST' IS THE REGISTERED TRADE MARK OF T. J. SMITH & NEPHEW, LTD., HULL.

ORIGINAL ARTICLES

EXPERIMENTAL STUDY OF BLAST INJURIES TO THE LUNGS

BY S. ZUCKERMAN, D.Sc. Lond., M.A. Oxfd, M.R.C.S.
DEPARTMENT OF HUMAN ANATOMY, UNIVERSITY OF OXFORD

(Carried out for the Research and Experiments Department, Ministry of Home Security)

THIS paper is a report of an experimental investigation carried out for the Research and Experiments Department of the Ministry of Home Security on the effects on the lungs of blast from high-explosive. A brief statement (E.M.S. Gen. 331) about some practical implications of this investigation was issued, on June 8, 1940, to E.M.S. hospitals by the Director-General of the Emergency Medical Service. The present more detailed account is being published, with the permission of the Ministry of Home Security, in the belief that a fuller statement of the problem is desirable at the present stage when it might be helpful to clinicians who encounter air-raid casualties.

The Nature of Blast

By blast is meant the compression and suction wave which is set up by the detonation of high-explosive (H.E.). At every point in the neighbourhood of an explosion there occurs first a momentary wave of high-pressure (for about 0·006 sec. for a 70 lb. charge), and then a negative "suction" pressure, due to the fact that the positive compression wave has reduced the density of the air behind it to below normal atmospheric pressure. Like the pressure component, the suction component of the blast wave only lasts for a fraction of a second, but as a rule for a longer period than the compression wave (up to 0·03 sec. for a 70 lb. charge).

The blast wave consists of a shell of compressed gas increasing in radius extremely rapidly (in the case of a 60 lb. charge at the rate of about 1500 ft. per second at 30 ft. from the charge). The pressure which the shell exerts on an object placed in it is due to the hydrostatic pressure of the compressed gas, which acts equally in all directions. Since the shell is moving rapidly it exerts, in the direction of motion only, an additional wind pressure on objects in its path. Any surface parallel to a radius of the shell or facing away from the explosion will be subject to the hydrostatic pressure alone. Any surface facing the explosion will be subjected to the wind pressure in addition to the hydrostatic pressure.

The wave of pressure is highest in the region of the explosion and falls off rapidly the further it moves away. Thus 15 ft. from a 125 lb. charge, the hydrostatic pressure may be of the order of 200 lb. per sq. in., whereas 50 ft. away the maximum pressure recorded will not be more than 10 lb. These figures represent pressure in excess of normal atmospheric pressure, which is approximately 15 lb. per sq. in. Close to the explosion the wind pressure may be as great as the hydrostatic pressure. It falls off more rapidly with distance than does the hydrostatic pressure. Everything in the immediate neighbourhood of a big bomb will therefore be suddenly exposed to a violent pressure wave of many times atmospheric pressure, whereas everything 50 ft. away will be exposed to only two or three times atmospheric pressure. At 100 ft. the excess pressure will be only a fraction of an atmosphere. Moreover the velocity and duration of the pressure wave at any given point are such that a body as large as a human being would certainly be completely immersed for an instant in a wave of almost uniformly raised pressure.

The suction component of the blast wave is always much weaker than the pressure component, and in no case can it ever be greater than 15 lb. per sq. in., since this corresponds to a perfect vacuum.

The magnitudes of the pressure and suction components of a blast wave are directly correlated with the amount of explosive, and are much higher for larger than for smaller amounts. On the other hand, if a given positive pressure is caused by a given amount of explosive at a given distance, the same pressure will be experienced at twice that distance only when the amount of explosive is increased eight times.

All things in the immediate neighbourhood of an explosion will thus first experience a violent increased wind and hydrostatic pressure, which may tear them to pieces and blow them far from the scene of the explosion. But if an object is not shattered by, and blown in, the direction of the pressure wave, it may later be pulled towards the centre of the explosion by the weaker suction wave because of the longer time for which this acts.

Injuries due to Bombs

In the case of a bomb explosion a man may be wounded (*a*) by being hit either by fragments of bomb-casing or by masonry or some other hard substance falling or sent flying by the explosion; or (*b*) by being violently thrown; or (*c*) by being affected by the blast wave without being thrown. The chances of being hit by a flying missile are proportionately greater the nearer one is to the explosion, where one would also come under the influence of the blast wave. If a man close to a bomb explosion were fortunate enough to miss a flying missile he could not escape being affected by blast unless he were sheltering close behind some substantial structure from which the wave would be deflected. Thus, whatever their chances of avoiding missiles, all exposed people in the neighbourhood of an explosion would be affected by that degree of blast pressure which would occur at the distance they were from the explosion.

Although not specifically referred to in the official History of the Great War, it is well established that during the period 1914–18 men were sometimes picked up dead in the field of an explosion without any external injury (or without any serious external injury) and sometimes with blood-stained fluid trickling from the nose or mouth (Logan 1939, Lockwood 1940). In a recent analysis of 250 cases of chest wounds which occurred during that period Thompson (1940) refers to "24 cases of non-penetrating wounds or cases in which penetration was doubtful" and in which "injury involved either the lungs or pleura as shown by hæmoptysis, pleurisy or pulmonary collapse." The blood-stained fluid which is found in the mouth and nose in cases of this kind is due to traumatic hæmorrhage in the lungs. Similar casualties occurred in the Spanish War (Haldane 1938, Kretzschmar 1940, Shirlaw 1940).

Experimental evidence about these lesions is provided by Hooker (1924) who exposed cats, dogs, rabbits and frogs at various distances to small charges of T.N.T. and to gun-blast. According to this worker bruising and rupture of the lungs "was the single gross lesion found post mortem after exposure to air concussion due to gun-blast or high explosive," and this lesion was probably the primary cause of death when it occurred. The occurrence of similar changes in goats and rats is referred to in the published report of the official Government tests, made in 1939, of galvanised corrugated steel shelters. The lesions occurred only in those animals which were outside the shelters (Report upon Investigation of the Standard of Protection afforded by Sectional Steel Shelters, 1939). Further reference to these lesions in dogs and rabbits is made in reports of French shelter tests.

There is no record in available published papers or confidential reports of experiments designed to show how the pulmonary lesions are caused. Various workers have, however, speculated about this question on the basis of the character of the lesions, and three possibilities have been suggested.

The first is that the lesions are due to the lowering of alveolar pressure by the suction wave, acting through the respiratory passages, with the consequent rupture of the alveolar capillaries. This possibility is suggested by Logan (1939), by Shirlaw (1940, p. 41), and in the French reports already referred to. It is also the view which is often stated in discussions of the casualties that occurred in Spain. The second possibility is that the lesions are caused by the distension of the lungs with air.

This is the view suggested in the report of the investigations of the standard of protection afforded by sectional steel shelters (1939). The third possibility is that the lung lesions are due to the impact of the pressure wave on the chest wall. This view is advocated by Hooker who writes with reference to experiments on frogs: "it is wholly improbable that lowered pressure could distend these organs sufficiently to cause their rupture. On the other hand a sudden elevation of pressure retarding the expulsion of air through the trachea and forcibly compressing the body walls could readily rupture these delicate organs." The same belief about the cause of the injury is stated by Kretzschmar in his recent clinical description of blast casualties in Spain.

The experiments which are described below suggest that it is the last of these possibilities that is the correct one, and that injury to the lungs is mainly caused by the impact of the blast wave on the body wall.

Observations on Animals

These experiments were carried out on mice, rats, guineapigs, rabbits, cats, monkeys, and pigeons, and were of two kinds. In the first animals were exposed at various distances to blast from 70 lb. of high-explosive placed (in paper containers) on the ground; in the second animals were exposed to blast from the explosion of charges of hydrogen and oxygen in balloons. In both, blast pressures were measured by means of piezo-electric gauges, and the experiments were so arranged that there were no flying missiles (e.g. stones) to hurt the animals.

BLAST FROM HIGH-EXPLOSIVE

The animals were sometimes allowed to take up their own positions in wire-mesh cages, and at other times were so arranged that the position in which they were placed was maintained during the period of the explosion. In some experiments the animals were placed on the ground, but in the majority they were raised above ground-level either on mounds or by being suspended from scaffolding which was firmly fixed on the ground. The cages and animals were so fixed that in none of the experiments discussed below (with very few exceptions) were any displaced by the explosion.

The closest an animal was placed to the charge in any experiment was 13 ft., and the furthest 70 ft. No animals were ever killed at distances further than 18 ft. and none was hurt in any observed way at distances further than 50 ft. from the explosion, a distance at which the positive component of the blast wave was of the order of 6·3 lb. per sq. in. and the suction component 1·3 lb. per sq. in. Between 13 and 18 ft. almost all animals were killed when placed so that their body walls were affected by hydrostatic pressure alone (i.e., end-on to the charge). At these distances the positive component of the blast wave (hydrostatic pressure) varied between 126 and 63 lb. per sq. in.

Between 20 and 50 ft. no animal was killed, and with few exceptions all animals which survived showed little or no change in behaviour. Most were quieter than they had been before the explosion, and except in marginal cases all ate readily when fed immediately afterwards. Animals at 20 ft. and those that survived at 18 ft. often breathed irregularly and showed signs of respiratory embarrassment.

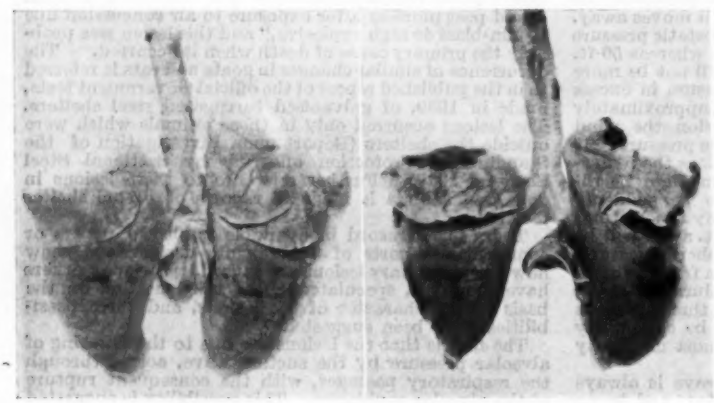
In none of the animals was there any external sign of injury, and in no case were fractures observed. The most outstanding lesion (as found by Hooker) was bilateral traumatic hæmorrhage in both lungs varying in degree according to the distance of the animals from the charge. Occasionally lesions have been found in other organs (e.g. liver, intestine); they will be discussed in a later report.

Post-mortem appearances.—Animals which survived were autopsied after they had been killed by coal-gas or by means of intravenously administered Nembutal. To direct inspection the pulmonary lesions, in cases of very slight damage, appear as a few pin-point spots of hæmorrhage on the surface of the lungs (fig. 1). In severer cases patches of hæmorrhage, of varying size, are present (fig. 2), and in very severe cases the entire surface of the lungs is hæmorrhagic (fig. 3). The hæmorrhages often follow the line of the ribs (fig. 1), and even when the hæmorrhage in the lungs is sufficiently extensive to affect almost the entire surface, darker lines of hæmorrhage following the lines of the ribs can sometimes be recognised against a background of lighter hæmorrhage. In most severe cases there may be superficial laceration along the lines of the ribs, which have presumably been driven into the lungs (see below). In such cases a hæmothorax and pneumothorax occur.

When the lungs are sectioned confluent zones of hæmorrhage, in very severe cases, are seen to extend almost through their entire substance. In some very severe cases the lungs were completely "hepatised" by hæmorrhage. In less severe cases localised and scattered hæmorrhages occur, sometimes in relation to a large bronchial tube (fig. 4). In slight cases points of hæmorrhage are present and are mainly subpleural in their disposition. As a general rule areas of internal hæmorrhage are related to zones of hæmorrhage visible on the surface.

The most vulnerable regions of the lungs are the anterior borders, which become pressed (see below) between the front of the chest wall and the mediastinum, and the inferior borders, which become compressed in the costo-phrenic sinus. The costal surfaces are also a site of election, and another very common site of injury is the mediastinal surface of the lungs, and in particular the azygos lobe, which passes from the root of the right lung across the mid-line behind the heart towards the left side.

In all cases where the degree of lung injury has been sufficient to kill the animal blood was found in the bronchial tubes, the trachea, and usually the mouth and nose. In marginal cases where animals survived for a few minutes after

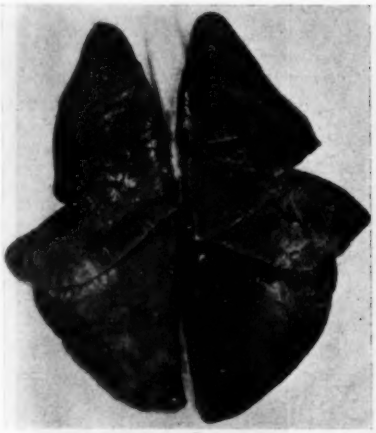


1 2

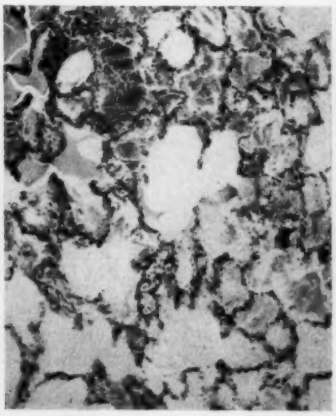
FIG. 1—Slight superficial hæmorrhages in lungs of rabbit exposed to blast. The hæmorrhages follow the lines of the ribs.

FIG. 2—More severe hæmorrhage in lungs of a rabbit exposed to blast.

FIG. 4—Hæmorrhage around a large bronchial tube in the lung of a rabbit exposed to blast.



3



5

7

FIG. 3—Very severe hæmorrhage throughout lungs of a rabbit exposed to blast.
FIG. 5—Transverse section of traumatised lung. Many alveoli are filled with red blood-cells and the alveolar walls are disrupted. × 60.
FIG. 7—X-ray photograph of lungs of rabbit which had been exposed to blast from H.E. five days before. The lungs have been filled with barium sulphate. The lower part of the left lung is still completely shut off.

the explosion blood-stained fluid has also been observed staining the saliva and bubbling from the nose. Occasionally animals recover even when the degree of lung hæmorrhage has been sufficient for free blood to occur in the nasopharynx. Blood is not found in the trachea or nasopharynx of animals which have been only moderately injured by blast, and it is occasionally absent when there has been extensive damage.

Microscopically the lesser degrees of damage appear as small zones in which the alveoli and the smallest bronchial tubes are filled with blood (figs. 5 and 6). The alveolar walls can often be seen to be disrupted, the hæmorrhage originating in the torn alveolar capillaries. Interstitial hæmorrhage also occurs. In severe grades of damage large areas of the lung are disrupted and hæmorrhagic, and the larger bronchial tubes become filled with blood. The areas affected in this way become consolidated.

The fact that parts of the respiratory tree become shut off is illustrated in fig. 7. This figure shows a radiogram of the lungs, which have been filled with barium sulphate, of a rabbit that suffered damage from blast five days before; the lower part of the left bronchial tree is still completely shut off. All but the lesser degrees of lung damage are detectable radiologically. Figs. 8 and 9 are antero-posterior and lateral radiograms of a cat before it has been exposed to blast at 18 ft. from a 70 lb. charge. The animal survived the explosion. Figs. 10 and 11 are corresponding pictures of its chest 4–5 hours later. Diffuse shadows show the regions of damage.

Healing is rapid, even in marginal cases in which the degree of pulmonary damage is sufficiently great to cause respiratory embarrassment for a day or two after the explosion. The nature of the healing process will be discussed in a later report, in which a more detailed account will be given of the histology of the lesion.

The degree of lung damage appears to be directly correlated with the magnitude of the blast wave to which the animals are subjected. Figs. 12, 13, and 14 illustrate a series of lungs in which the damage is of increasing severity. In fig. 12 the hæmorrhagic lesion is confined to the tip of the anterior border, and in successive specimens the zone of damage increases progressively, as did the pressure to which the animals concerned were subjected.

Sufficient data are not as yet available to determine whether bigger animals are less sensitive to blast than smaller ones. The information available suggests that they are. Thus all mice and guineapigs placed 13, 14 and 16 ft. from a charge of 70 lb. of H.E. were immediately killed without showing any external signs of injury. One mouse and one guineapig, each of a group of five, survived at 18 ft. On the other hand, while all of five rabbits were killed at 14 ft., one of five survived at 16 ft. and two of five at 18 ft. At 18 ft. only two of ten cats (larger in size than the rabbits) were killed.

BLAST FROM EXPLOSION OF HYDROGEN AND OXYGEN IN BALLOONS

The character of the blast wave in balloon explosions is the same as that of blast from H.E., except that there is a slight lag in the initial rise of the pressure wave.

Pulmonary lesions which occurred in animals placed 3 ft. and more from the centre of the balloon were bilateral, and similar in character to the less extensive damage observed in the H.E. experiments. As the animals were moved closer to the balloon (and thus exposed to a higher blast pressure), the lesions became more severe and mainly, if not entirely, unilateral (fig. 15).

Animals placed as close to the explosion as was possible were also within the region of the flame of the explosion and the fur of those parts which took the main force of the explosion was singed. In these cases it was found that the lung lesions were always mainly localised to the side which had been singed.

In the H.E. experiments the animals were placed some distance from the charge to avoid the immediate disruptive effects of the explosion, and it is certain that the blast wave acted equally, and for practical purposes,

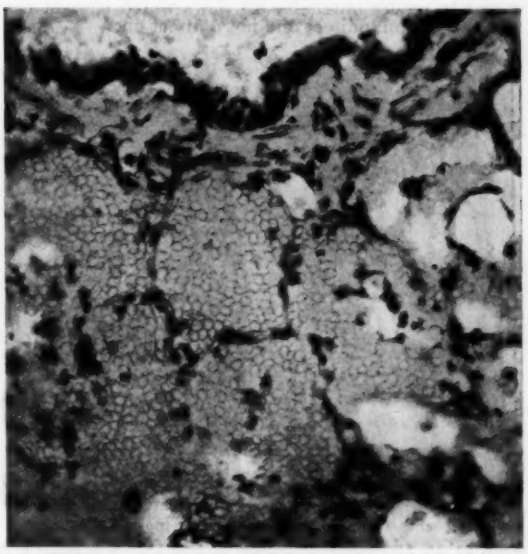
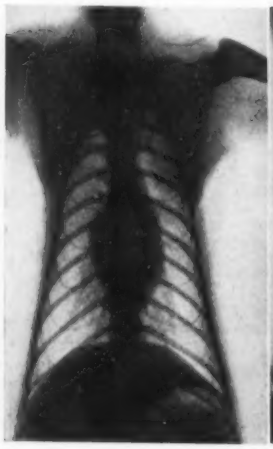


FIG. 6—High power view of rabbit lung after blast. × 340.



8

9

FIGS. 8 and 9—Antero-posterior and lateral views of thorax of a cat before exposure to blast from H.E.

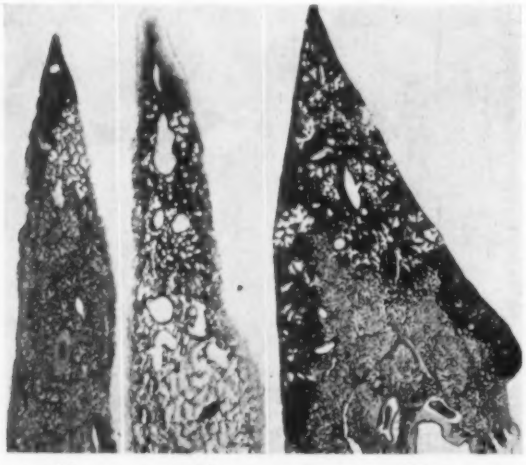
10

11

FIGS. 10 and 11.—Antero-posterior and lateral views of thorax of same cat 4 to 5 hours after the explosion.

simultaneously, on all sides of the animals. In these experiments the lesions were bilateral, as they were in those animals which were placed 3 ft. or more from the centre of the balloon explosion. It was noted (*a*) that the lung lesions frequently follow the lines of the ribs (in cats exposed to blast, the marks of the lower ribs can also be seen as lines of "congestion" on the liver); (*b*) that when lacerations occur they are in line with the ribs; and (*c*) that a site of election of the lesions are those parts which fit into the costo-mediastinal and costo-phrenic sinuses.

These facts suggest that the lesions are caused by the impact of the blast wave on the body wall. The fact that in the balloon experiments the lesions were localised to the side facing the explosion in animals which had been placed very close to the balloon cannot be readily interpreted in any other way, and it implies that in these cases the side facing the explosion shielded the other from blast. For if blast affects the lungs through the respiratory passages, either by reducing alveolar pressure or by suddenly distending the alveoli with air, it is impossible to explain why animals placed close to the balloon explosion sustain damage to one lung only, and to the lung on the side facing the explosion. This consideration seems to render untenable all views which suggest that the effect is an indirect and not a direct one.



12 13 14

FIGS. 12, 13, 14—Increasing degrees of hæmorrhage in lungs with increasing blast pressures.

There is another consideration which makes it highly improbable that the suction wave could reduce the alveolar pressure sufficiently by drawing air from the respiratory tree for hæmorrhage to occur. The respiratory rate of four normal rabbits was carefully measured and was found to vary from 48 full cycles when the animals were calm to 160 cycles a minute when the animals were excited. The shortest duration of a respiratory cycle is thus of the order of 375 millisec. Of this time about 100 millisec. would be taken by the act of expiration, and 150 millisec. by the resting phase which intervenes between expiration and the next inspiration. Measurements of the duration of the blast from a 70 lb. charge show that, within the effective region in which rabbits sustain lung injuries, the duration of the pressure and suction waves are of the order of 5 and 30 millisec. respectively. The time available to the suction wave for exhausting the lungs through the trachea is thus a fraction of the time the expiratory act takes, even in very fast breathing. Moreover, while the normal fast expiratory act is assisted by the collapse of the chest wall, the chest wall would be pulled outward by the suction wave, and this change would tend to prevent exhaustion of the air from the alveoli. It is difficult to see, therefore, how a suction wave, in the 30 millisec. in which it acts, could possibly reduce the pressure within the enormously complex ramifying system of minute tubes in the lungs sufficiently for capillaries to burst, and even less for the pulmonary tissue to tear. It is even more difficult to see how the momentary pressure component could distend the lungs with air through the trachea and bronchial tubes, whilst the chest wall was being compressed.

On the other hand, it is not impossible that, once the lungs have been bruised by the impact of the pressure wave, the suction wave could add to the damage by pulling the chest wall outwards and thereby stretching the lung tissue (which would follow the movement of the chest wall).

TESTS OF HYPOTHESIS THAT BLAST INJURIES TO THE LUNGS ARE MAINLY DUE TO THE IMPACT OF THE BLAST WAVE ON THE BODY WALL

Two sets of experiments were designed to test this conclusion.

The first was performed on pigeons, which, like all birds, have very delicate thin-walled air-sacs that lead from the lungs. It was assumed that if the suction component of the blast wave acts through the bronchial tree, as has often been supposed, the sacs would be displaced from their normal position, possibly ruptured and the broken lining wall invaginated. The pigeons were accordingly exposed to balloon explosions at various distances where rabbits and guinea-pigs suffer pulmonary damage. None of the birds was injured, and no changes were observed in the disposition of the air-sacs.

The second set of experiments was designed to find out if the severity of lung injuries due to blast would be reduced if the body is covered in a coat which would absorb and disperse the pressure wave. The trunks of rabbits were accordingly clothed in various thicknesses of sponge-rubber and the animals were then exposed, together with controls, to blast from H.E. and to blast from balloon explosions. It was found that animals which were sufficiently thickly clothed received no pulmonary damage, or very slight damage compared to the controls.

In a further set of experiments, rabbits were exposed to blast from balloon explosions with only one side of the trunk clothed in this way, the animals being placed as close to the balloon as was possible. Those animals which were exposed with the uncovered side facing the explosion suffered severe damage to the lung on that side, and less severe damage to the lung on the opposite side. Those animals which were exposed with the clothed side facing the explosion suffered no damage, or very slight damage, to the lungs.

These experiments show that it is the pressure wave of blast which bruises the lungs by its impact on the body-wall. They also demonstrate that this effect can be prevented, or diminished, if the body is clothed in a suitable material which is able to take up and disperse the pressure wave.

Discussion

In the experiments described, injury to the lungs due to blast from H.E. has been observed in mice, rats, guineapigs, rabbits, cats and monkeys. As already noted similar lesions have been reported in goats and in dogs, while there are clinical reports of similar injuries in man, as indicated in the paper by Dean, Thomas and Allison in this issue. Published pathological reports relating to the condition in man do not appear to be available.

As a result of an inquiry my attention was drawn to one possible case of blast injury to the lungs that had been investigated by Prof. Shaw Dunn during the last war. In a personal communication Prof. Shaw Dunn writes that the casualty in question was a man who was blown up by a mine and who escaped gross injury, but died with meningitis five days later. In the lungs there were "areas of slight diffuse bleeding associated with bulla formation due to bursting of pleura from lung. Section shows less hæmorrhage than one would have expected from macroscopic appearances. There is also an early bronchial pneumonia, which would have to be discounted as a secondary development."

My attention has since been directed to a second death which took place in a recent air-raid on this country in which blast injury to the lungs appears to have played a part (Falla 1940).*

The man concerned was in a room in which a bomb of medium calibre exploded. He suffered a deep laceration of his right thigh, but no other external injury. There was no bleeding from the mouth or nose. His wound was cleaned two hours after the accident, and a little later he was given plasma. Twelve hours after the explosion he died. An autopsy was performed seven hours after death and numerous scattered small fresh hæmorrhages were found throughout the lungs. Microscopically the lesions do not correspond to the severer cases seen in the experimental material which has been described above. The lungs show signs of old bronchitis and pleural thickening; the acute changes are a fairly generalised arteriolar dilatation, and intense focal capillary dilatation, with exudation of fluid into many alveoli. In a few places the lung tissue is disrupted and free blood-cells are present in the alveoli, in small bronchial tubes, and in the interstitial tissue (figs. 16, 17, 18).

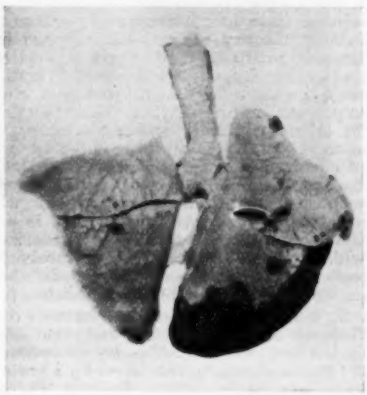
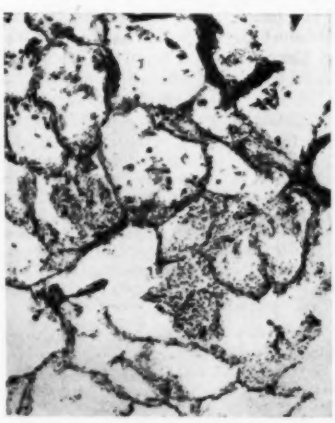


FIG. 15—Severe hæmorrhage in right lung of a rabbit which had been exposed to blast from the explosion of oxygen and hydrogen in a balloon. The animal was placed so close to the explosion that the right side shielded the other.

In this latter respect the lesions are similar to those which occur under experimental conditions, and there seems to be good reason therefore (although not absolutely certain reason) for regarding the case as one of slight blast injury to the lungs.

It is of course unlikely that this single instance demonstrates all the changes which may occur in the human lungs as a result of blast. In so far as the character of pulmonary lesions has been constant in the eight species of mammal in which they have been produced experimentally, it is to be expected that severer degrees of trauma, with more hæmorrhage, are likely to occur in man. Human lungs may, however, prove less susceptible to blast injury than those of small mammals, for, as noted earlier, the present indications are that a given blast pressure will cause less injury to the lungs of a larger mammal than to those of a smaller. Furthermore, it must be emphasised that blast injuries to the lungs will occur only when a person is unfortunate enough to be very close to an exploding bomb, and that they

* This case is discussed by Dr. S. T. Falla in the current issue of the *British Medical Journal*. Dr. Falla kindly allowed me to examine the lungs and to remove several pieces for histological examination. For permission to do so, and to discuss and illustrate the case I am grateful both to him and his colleagues in the hospital where the case was treated.



16

17

18

FIGS. 16, 17, 18—Photomicrographs of lungs of a man who died as a result of injury sustained in an air-raid (Dr. Falla's case). The alveoli, which are disrupted, are filled with blood-cells and with large pigment phagocytes. Fig. 18 shows the rupture of the capillaries in the walls of an alveolus. (× 60, 170, and 235 respectively.)

will not occur unless he is directly exposed to the blast wave. For example, whatever the chances for a person inside a house to be injured when a bomb explodes nearby in a street, it is unlikely (although not impossible) that his injuries will include lung damage due to blast.

General considerations indicate that with widespread bombing cases of sub-lethal lung damage are likely to exceed in number lethal cases (even though neither may prove to be relatively common). It is therefore necessary to consider that a person who has been bombed and is in a state of collapse, but has neither sustained splinter wounds nor has been struck or crushed by flying or falling masonry, may be suffering not from psychological trauma but from definite pulmonary lesions.

Judging by the experimental findings these lesions may present few or no obvious clinical signs. Our experimental observations, and the clinical ones detailed by Allison and his colleagues, show, however, that in such cases they can be detected radiologically. In other instances it is to be expected that attention would be drawn immediately to lung damage by symptoms of respiratory embarrassment, even when no obvious external injury was present. It is equally important that this condition should be borne in mind in cases in which external injury has been received, especially when such injury has been inflicted in the open or in an enclosed area into which a bomb has penetrated.

In a recent report on the treatment of air-raid casualties Hodgson and McKee (1940) write that a patient who got up for the first time on the 5th day immediately "had an attack of 'blue asphyxia'; this lasted for a few minutes after which there was full recovery. On the 7th day no undesirable symptoms followed a second attempt to get up. Similar attacks have occurred in cases not in this series, and it is possible that they may be the sequel to the effects of blast on the lungs. These organs on post-mortem examination may show multiple points of interstitial hæmorrhage, presumably the result of concussion." (Further details of post-mortem examinations are not given.)

It is thus clear that lung injury due to blast, whether detected or not detected, may raise serious problems in regard to anæsthesia and surgical treatment.

Hooker's studies in 1924 were largely concerned with the question of the relation of shock to the pulmonary damage caused by blast. Blast, he clearly showed, produces a state of shock which is instantaneous in onset and which is associated with a sudden marked fall both in arterial and venous pressure. His own view was that shock and pulmonary damage are not connected. He writes: "The injury done the lungs . . . is not causal to shock since exposure to high explosive in no case produced typical shock and yet the pulmonary involvement was of extremest grade. . . . Extensive laceration and destruction of lung tissue does not release a toxic substance, i.e. histamine, into the circulation in sufficient quantities to produce a physiological reaction." The relationship of concussion-shock to traumatic-shock has not as yet been elucidated, and the problem clearly requires further investigation.

Summary

Mice, rats, guineapigs, rabbits, cats, monkeys and pigeons were exposed in the open to blast from the explosion of charges of 70 lb. of H.E. and from the explosion of hydrogen and oxygen in balloons.

In the H.E. experiments no animals were ever killed at distances further than 18 ft., and none was ever hurt in any observed way at distances further than 50 ft. from the explosion. Almost all animals were killed between 13 ft. (the nearest any animal was placed) and 18 ft., distances where the positive component of the blast wave (hydrostatic pressure) varied between 126 and 62 lb. per sq. in. In no animal was there any external sign of injury, and the outstanding lesion was bilateral traumatic hæmorrhage in both lungs, varying in degree according to the distances of the animals from the charge and the pressure to which the animals were subjected. In all cases where the degree of lung injury was sufficient to kill the animal blood, was present in the upper respiratory passage; it was also present in a few cases where animals recovered.

The lesions were detectable radiologically.

The pulmonary lesions caused by blast from balloon explosions were the same in character and bilateral except when animals were placed so close to the balloon that the exposed side shielded the other. In the latter case the lesions were mainly or entirely unilateral, and confined to the exposed side.

Animals whose bodies were clothed in thick layers of rubber suffered little or no damage compared to controls.

It is concluded from these experiments that it is the pressure component of blast which bruises the lungs by its impact on the body wall.

The occurrence of similar lesions in man raises several problems in relation to treatment.

I am grateful to the Chief Adviser and the officers of the Research and Experiments Department, Ministry of Home Security, and to the Director and Officers of the Road Research Laboratory, D.S.I.R., for their help in this study. The progress of the work has also been greatly accelerated by the assistance of Dr. R. B. Fisher and Dr. P. L. Krohn. My thanks are also due to Dr. F. H. Kemp and to Dr. A. E. Barclay for their coöperation in the radiological study of the lesions, to Prof. F. R. Fraser, A.D.G. of the E.M.S., for directing clinical attention to, and obtaining clinical information about, the problem, to Prof. J. Shaw Dunn for allowing me to quote from his case-record of the last war and to Dr. A. H. T. Robb-Smith for his opinion on the human sections.

REFERENCES

Falla, S. T. (1940) *Brit. med. J.* Aug. 24.
Haldane, J. B. S. (1938) *A.R.P.* London.
Hodgson, A. R. (1924) *Amer. J. Physiol.* **67**, 219.
Kretzschmar, C. H. (1940) *Lancet*, **1**, 832.
Lockwood, A. L. (1940) *Brit. med. J.* **1**, 356.
Logan, D. D. (1939) *Ibid*, **2**, 864.
Official History of the Great War, Medical Services, London. 1922.
Sectional Steel Shelters: Report upon Investigations of the Standard of Protection Afforded, London, 1924.
Shirlaw, G. B. (1940) Casualty: The Civil Defence Casualties Services, London.
Thompson, F. G. (1940) *Brit. med. J.* **1**, 44.

EFFECTS OF HIGH-EXPLOSIVE BLAST ON THE LUNGS

By D. M. Dean, M.B. Lond.
SURGEON LIEUT.-COMMANDER R.N.V.R.
A. Robinson Thomas, B.Chir. Camb., D.M.R.E.
SURGEON COMMANDER R.N.V.R.; AND
R. S. Allison, M.D. Belf., F.R.C.P.
SURGEON COMMANDER R.N.V.R.
(*From a Royal Naval Auxiliary Hospital*)

A MEMORANDUM from the Ministry of Health draws attention to the likelihood of chest injuries (without penetrating wounds) resulting from the blast of high-explosive bombs. Their cause and nature have been the subject of experimental work. Thomson[1] and Lockwood[2] review the experiences of chest wounds gained in the last war. Lockwood refers especially to "men who are wounded by a close-up shell or bomb explosion. They died without an apparent wound. . . . These men have a rupture of the visceral pleura of the lungs or a complete collapse of the lungs. . . . They will be common as the result of aerial bombing." So far as we are aware no cases of this kind have yet been reported during the present war. We have had an opportunity of studying some, and although the material is small, the results are considered of sufficient interest to make a report.

There were 27 cases in the series. All had been close to bursting high-explosive bombs and they were examined seven to ten days after the event. There were 21 with extensive superficial burns. Of the rest, 5 had fractures, and 1 multiple splinter wounds of the legs; 7 had been concussed by the explosion, 3 immersed in the sea, and in all but 2 there had been direct exposure to heavy blast at relatively close quarters. It is only proposed to discuss the conditions found in the chest. This was the subject of special inquiry in all cases.

CASE-RECORDS

CASE 1.—Burns. Blast. Concussion. Cough and sputum with temp. 100° F. on second day. Diagnosed "blast bronchitis." No chest symptoms when seen seven days later. Curious fullness of lower part of chest. No other abnormal physical signs. X ray: no abnormality (fig. 1).

1. Thomson, F. G. *Brit. med. J.* 1940, **1**, 44.
2. Lockwood, A. L. *Ibid*, p. 356.

CASE 2.—Burns. Blast. No chest symptoms, physical signs or X-ray abnormality.

CASE 3.—Burns. Blast. No chest symptoms. Coarse crepitations R. base. Diminished movement R. diaphragm. Fullness of chest, especially lower half. X ray: some pleural thickening and congestion of R. lower lung field.

CASE 4.—Burns. Blast. Fracture L. arm. No chest symptoms. Diminished diaphragmatic movement and fullness of lower chest. X ray: no recent changes. Several old calcified foci seen.

CASE 5.—Burns. Blast. No chest symptoms. Diminished air-entry in front of chest. Numerous coarse crepitations at bases. Fullness of lower chest. X ray: congestive changes in both lung-fields.

CASE 6.—Burns. Blast. No chest symptoms. Diminished movement L. chest. X ray: no abnormality.

CASE 7.—Burns. Blast. No chest symptoms. Increased fullness of chest simulating "barrel" type. Diminished air-entry all over. X ray: little pleural thickening on L. side.

CASE 8.—Burns. Blast. No chest symptoms, physical signs or X-ray abnormality.

CASE 9.—Burns. Blast. Concussion. Cough and sputum. Restlessness. Temp. 100° F. on third day. Now no symptoms save cough. Diminished movement L. diaphragm. Fullness L. lower chest. X ray: little pleural thickening on L. side.

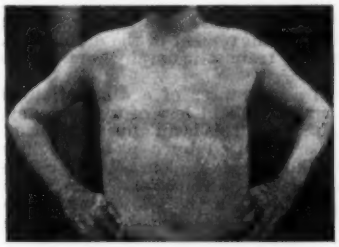


FIG. 1—External appearance of chest in case 1, after blast injury. Note fullness of lower part of chest.

CASE 10.—Fracture R. fibula from falling debris. Blast doubtful. No chest symptoms, signs, or X-ray abnormality.

CASE 11.—Burns. Blast. No chest symptoms. Fullness of lower chest. Poor air-entry at both bases. Radiogram suggests a mild degree of pleurisy L. side (fig. 5).

CASE 12.—Burns. Blast. Fracture L. ilium. No chest symptoms. Diminished R. diaphragmatic movement. X ray: no abnormality.

CASE 13.—Burns. Blast. Some post concussional stupor still present. No chest symptoms. Diminished air-entry all over chest. Impaired resonance and coarse crepitations L. base. X ray: some degree collapse L. lower lobe (fig. 2).

CASE 14.—Burns. Blast. Cough and sputum on third day. Fullness of lower chest. Diminished air-entry all over chest. X ray: no abnormality.

CASE 15.—Burns. Blast. No chest symptoms, physical signs or X ray abnormality.

CASE 16.—Burns. Blast. Fracture R. foot. Cough with thick yellow sputum. Shortness of breath on second day. Now no abnormal physical signs in chest. X ray: no abnormality.

CASE 17.—Burns. Blast. Cough with sputum fifth day.

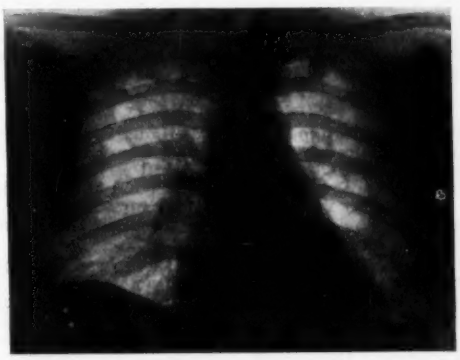


FIG. 2—Chest in case 13, showing some collapse of lower lobe on left side.

Skin too much affected to examine chest. X ray: no abnormality.

CASE 18.—Burns. Blast. Immersion. Cough and sputum second day. Patchy dullness over both bases, especially R., with dry cough and fine crepitations and diminished air-entry at both bases. X ray: abnormal shadowing in both lower lung fields, most marked on right (fig. 3).

CASE 19.—Blast. L. Pott's fracture and traumatic amputation R. leg. No chest symptoms. Fullness of lower chest simulating "barrel" type. X ray: no abnormality.

CASE 20.—Burns. Blast. Concussion. No chest symptoms. Fullness of lower chest. L. diaphragmatic movement limited. Harsh loud breath sounds in front. X ray: some pleural thickening in left upper zone (fig. 4).

CASE 21.—Blast. Multiple splinter wounds lower extremities. No chest symptoms, physical signs, or X-ray abnormality.

CASE 22.—Burns. Blast. No chest symptoms. Fullness of lower chest. L. diaphragm not moving as well as R. Scattered sibilant rhonchi all over. X ray: bronchitic changes present.

CASE 23.—Blast doubtful. Concussion from falling debris. Fracture R. scapula. No chest symptoms. Poor air-entry all over chest. Rhonchi. Abdominal respiration. X ray: bronchitic changes in both lung-fields. Some suspicious shadowing at L. apex. Calcified focus in this region with other shadowing which might be active. Admits cough and previous long-standing chest trouble.

CASE 24.—Blast. Traumatic amputation L. leg. No chest symptoms. Fullness of chest with hyper-resonant percussion note. Diminished L. diaphragmatic movement. X ray: probably mild degree of pleurisy L. side.

CASE 25.—Burns. Blast. No chest symptoms. Fullness of lower chest. Diminished diaphragmatic movement both sides. X ray: no abnormality.

CASE 26.—Burns. Blast. Concussion. No chest symptoms. Fullness of lower chest like emphysema. Intercostal

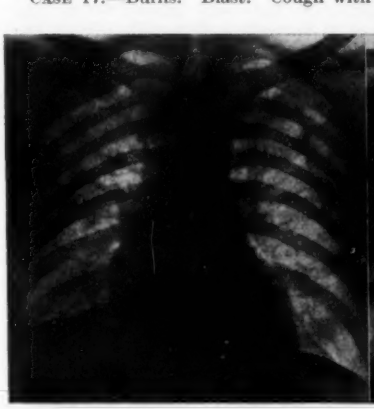


FIG. 3—Chest in case 18, showing bronchopneumonia of both lower lobes.

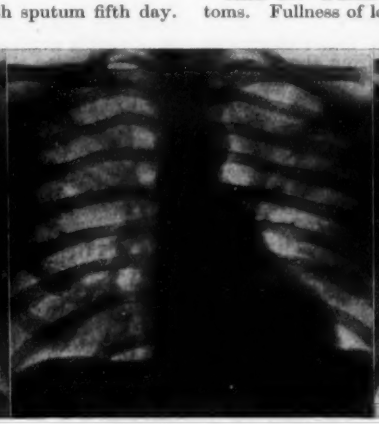


FIG. 4—Chest in case 20, showing pleural thickening in left upper zone.

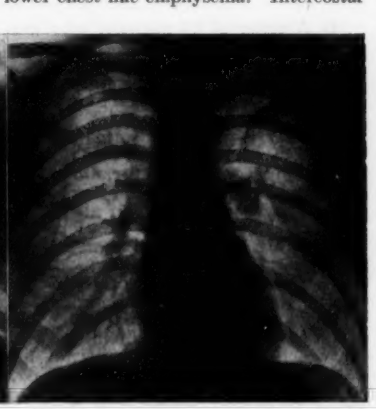


FIG. 5—Chest in case 11, showing pleural thickening on left side.

spaces full. Impaired resonance R. axilla and R. base. X ray: no abnormality.

CASE 27.—Blast. Fracture R. hip. No chest symptoms. Fullness of lower chest. Diminished air-entry both bases. X ray: no abnormality.

DISCUSSION

Symptoms relating to the chest.—Cough and expectoration were noticed by 6 patients, and in 1 of these there was shortness of breath and general restlessness. The symptoms appeared between the second and fifth days. In no instance were they noticed on the day of the bombing. No-one complained of pain in the chest or of spitting bloodstained sputum.

Physical signs.—In 16 cases there were abnormal physical signs of a recognised character. In only 3 of these were the signs marked. In 15 cases the chest seemed fuller than normal, especially in the lower parts (fig. 1). In 1 case the intercostal spaces seemed to share this fullness. Diminished diaphragmatic movement was present in 10 cases, in 2 affecting the right side, in 4 the left side, and in 4 both sides. There was no tenderness to suggest fracture of the ribs and no evidence of this was found in the radiograms; there was no surgical emphysema. There was generalised hyper-resonance in 1 case. In 3 cases there was impaired resonance either at one or both bases. Loud harsh breath-sounds were present in 1 case. In 7 patients the breath-sounds were faint and almost inaudible. Added sounds were heard in 6 patients—i.e., coarse or fine crepitations at one or both bases and in 2 cases diffusely scattered rhonchi. In no case was a pleural friction sound heard.

One patient (case 23) was clearly the subject of old chest trouble as confirmed by X-ray examination, and the findings were discounted. Case 18 had patchy areas of dullness at both bases, especially the right, with fine crepitations and diminished air-entry resembling a bronchopneumonia. This was confirmed on X-ray examination. Another (13) had signs of collapse in the left lower lobe also confirmed by X ray.

Radiological findings.—X-ray examination presented difficulties, for the patients had to be examined in bed, on account of their injuries, and they could not have their position in bed adjusted as required. Standardisation of position, therefore, could not be attained and allowance had to be made for this in scrutinising the radiograms. Abnormal radiological appearances were found in 14 out of the 27 cases. Of these, 2 showed obvious changes; 1 case (13) had a fairly dense area in the lower left lung field due to consolidation of part of the lung, probably the lower lobe (fig. 2), while case 18 showed the congestive changes of a bronchopneumonia (fig. 3). The remainder showed changes similar to an early pleurisy—a diminution of rib-expansion on the affected side, together with a slight loss of translucency (figs. 4 and 5). In nearly all the cases this appearance was on the left side.

SUMMARY AND CONCLUSIONS

1. A series of 27 patients who were under treatment for burns or other injuries resulting from the bursting of high-explosive bombs at close quarters are reviewed with special regard to the state of their chests. In only 2 patients was the question of exposure to blast doubtful, in the remainder severe blast had been experienced.

2. Only 6 patients complained of symptoms related to the chest; 16 showed some abnormal physical signs and 14 showed abnormal radiological appearances.

3. Evidence of serious or gross pathological changes in the chest was absent in all but 2 cases; 1 of these had the signs of collapse of a lobe of the lung, the other had the signs of a patchy consolidation of the bronchopneumonic type.

4. The relative importance of the three factors to which the patients were exposed—blast, burns, and immersion—in relation to the chest conditions is impossible to assess. It will be difficult to find cases in which there are no external injuries. Immersion may have played an important part in case 18, for example, but only 3 suffered this experience and the other 2 showed neither symptoms nor signs of chest involvement. Burns were extensive though superficial, but in case 17 with burns which involved almost the whole skin of the chest, there was no X-ray evidence of chest involvement. Physical examination was impossible in this case.

5. Attention is specially drawn to:

(*a*) The relative disproportion in frequency between the symptoms and physical signs in the cases studied. This may be due to the fact that all were the subject of serious injuries which would tend to direct their attention away from the chest. Moreover, they were all confined to bed. Chest complications may arise after explosion blast without definite warning symptoms and this should encourage the performance of routine examinations even in those who are apparently unaffected by the blast.

(*b*) The physical signs, judging from what we have seen, that may be expected are: diminished movement of the diaphragm; fullness of the chest giving it an emphysematous appearance; and impairment of resonance at one or both bases, with or without crepitations.

(*c*) The frequency of a "blown-up" or ballooned appearance of the chest, especially at the lower costal margins after such injuries. This may be related to the posture the patients adopted in bed, or to the presence of an already existing emphysema, though this seems unlikely since they were all young men and in good health before being injured. This appearance was often associated with diminished movement of the diaphragm. It may be that some true traumatic emphysema results in these cases.

(*d*) The radiological appearances of a diminution of rib-expansion, together with slight loss of translucency, particularly on the left side. This is an appearance that theoretically should be produced by a pleura slightly thickened by bruising and "bruised pleura" may be the pathological condition present. The explanation of the frequency of this appearance on the left side may be that this was the side exposed to the blast, but we have been unable to confirm this point.

PENICILLIN AS A CHEMOTHERAPEUTIC AGENT

BY

E. CHAIN, PH.D. CAMB.
H. W. FLOREY, M.B. ADELAIDE,
A. D. GARDNER, D.M. OXFD, F.R.C.S.
N. G. HEATLEY, PH.D. CAMB.
M. A. JENNINGS, B.M. OXFD,
J. ORR-EWING, B.M. OXFD,
A. G. SANDERS, M.B. LOND.

(*From the Sir William Dunn School of Pathology, Oxford*)

IN recent years interest in chemotherapeutic effects has been almost exclusively focused on the sulphonamides and their derivatives. There are, however, other possibilities, notably those connected with naturally occurring substances. It has been known for a long time that a number of bacteria and moulds inhibit the growth of pathogenic micro-organisms. Little, however, has been done to purify or to determine the properties of any of these substances. The antibacterial substances produced by *Pseudomonas pyocyanea* have been investigated in some detail, but without the isolation of any purified product of therapeutic value.

Recently, Dubos and collaborators (1939, 1940) have published interesting studies on the acquired bacterial antagonism of a soil bacterium which have led to the isolation from its culture medium of bactericidal substances active against a number of gram-positive micro-organisms.[1] Pneumococcal infections in mice were successfully treated with one of these substances, which, however, proved to be highly toxic to mice (Hotchkiss and Dubos 1940) and dogs (McLeod et al. 1940).

Following the work on lysozyme in this laboratory it occurred to two of us (E. C. and H. W. F.) that it would be profitable to conduct a systematic investigation of the chemical and biological properties of the antibacterial

1. See *Lancet*, 1940, **1**, 1172.

RESULTS OF THERAPEUTIC TESTS ON MICE INFECTED WITH *Strep. pyogenes*, *Staph. aureus* AND *Cl. septique*

Expt.	—	Dose of infecting culture (c.cm.)	Interval before starting treatment (hrs.)	Duration of treatment	Single dose (mg.)	Total dose (mg.)	No. of mice	Survivors at end of— hours 6	hours 12	hours 24	days 2	days 3	days 4	days 5	days 6	days 7	days 8	days 9	days 10
Strep. pyogenes—Lancefield, Gp. A.																			
1	Controls	0·5	..	..	..	..	25	..	15	9	8	6	..	5	..	4	..	..	4[1]
	Treated	0·5	1	12 hrs.	2	10·0	50	..	..	..	49	42	..	34	30	28	..	26	25
2	Controls	0·5[2]	..	..	..	..	25	24	3	0[3]	..	..	..	..	..	..	..	..	0
	Treated	0·5	2	45 hrs.	0·5	7·5	25	24	..	..	..	..	..	..	..	..	..	..	24
Staph. aureus[4]																			
1	Controls	1·0	..	..	..	..	24	21	1	0[3]	..	..	..	..	..	..	..	..	0
	Treated	1·0	1	55 hrs.	0·5	9·0	25	25	12	..	11	..	10	..	..	..	..	..	8
2	Controls	0·2[2]	..	..	..	..	24	23	15	5	0	..	..	..	..	..	..	..	0
	Treated	0·2	1	4 days	0·5	11·5	24	..	23	22	..	..	21	..	..	..	..	..	21
Cl. septique																			
1	Controls	see text	..	..	..	..	25	..	21	0[5]	..	..	..	..	..	..	..	..	0
	Treated	..	1	10 days	0·5	19	25	..	..	24	21	..	18	..	..	..	..	..	18
		..	1	10 ,,	1·0	38	25	..	..	..	..	..	24	..	..	..	..	..	24

1. A control mouse which was killed by mistake at 24 hrs. is counted as a survivor. Heart-blood culture strongly positive.
2. Between experiments 1 and 2 the virulence of the organism was raised by passage.
3. Controls all dead within 16 hrs.
4. A bovine strain exceptionally virulent to mice kindly supplied by Dr. H. J. Parish of the Wellcome Laboratories.
5. Controls all dead within 17 hrs.

substances produced by bacteria and moulds. This investigation was begun with a study of a substance with promising antibacterial properties, produced by a mould and described by Fleming (1929). The present preliminary report is the result of a coöperative investigation on the chemical, pharmacological and chemotherapeutic properties of this substance.

Fleming noted that a mould produced a substance which inhibited the growth, in particular, of staphylococci, streptococci, gonococci, meningococci and *Corynebacterium diphtheriæ*, but not of *Bacillus coli*, *Hæmophilus influenzæ*, *Salmonella typhi*, *P. pyocyanea*, *Bacillus proteus* or *Vibrio choleræ*. He suggested its use as an inhibitor in the isolation of certain types of bacteria, especially *H. influenzæ*. He also noted that the injection into animals of broth containing the substance, which he called "penicillin," was no more toxic than plain broth, and he suggested that the substance might be a useful antiseptic for application to infected wounds. The mould is believed to be closely related to *Penicillium notatum*. Clutterbuck, Lovell and Raistrick (1932) grew the mould in a medium containing inorganic salts only and isolated a pigment—chrysogenin—which had no antibacterial action. Their culture media contained penicillin but this was not isolated. Reid (1935) reported work on the inhibitory substance produced by Fleming's mould. He did not isolate it but noted some of its properties.

During the last year methods have been devised here for obtaining a considerable yield of penicillin, and for rapid assay of its inhibitory power. From the culture medium a brown powder has been obtained which is freely soluble in water. It and its solution are stable for a considerable time and though it is not a pure substance, its anti-bacterial activity is very great. Full details will, it is hoped, be published later.

EFFECTS ON NORMAL ANIMALS

Various tests were done on mice, rats and cats. There is some œdema at the site of subcutaneous injection of strong solutions (e.g. 10 mg. in 0·3 c.cm.). This may well be due to the hypertonicity of the solution. No sloughing of skin or suggestion of serious damage has ever been encountered even with the strongest solutions or after repeated injections into the same area.

Intravenous injections showed that the penicillin preparation was only slightly, if at all, toxic for mice. An intravenous injection of as much as 10 mg. (dissolved in 0·3 c.cm. distilled water) of the preparation we have used for the curative experiments did not produce any observable toxic reactions in a 23 g. mouse. It was subsequently found that 10 mg. of a preparation having twice the penicillin content of the above was apparently innocuous to a 20 g. mouse.

Subcutaneous injections of 10 mg. into two rats at 3-hourly intervals for 56 hours did not cause any obvious change in their behaviour. They were perhaps slightly less lively than normal rats but they continued to eat their food. Their blood showed a fall of total leucocytes after 24 hours, but after 48 hours the count had risen again to about the original total. There was, however, a relative decrease in the number of polymorphs, but the normal number was restored 24 hours after stopping the administration of the substance. One of these two rats was killed for histological examination; there was some evidence that the tubule cells of the kidney were damaged. The other has remained perfectly well, and its weight increased from 76 to 110 g. in 23 days. It is to be noted that these rats received, weight for weight, about five times the dose of penicillin used in the curative experiments in mice. No evidence of toxic effects was obtained from the treated mice, which received penicillin for many days.

Other pharmacological effects.—On the blood-pressure, heart-beat and respiration of cats no effects have been observed after intravenous injection of 40 mg.—enough to bring up the concentration in the blood just after injection to 1/5000. *Perfusion* of the isolated cat's heart, with Ringer-Locke solution containing 1/5000 penicillin produced progressive slowing during 15 minutes and at the end of that time the heart looked as though it would stop beating; however, it was quickly revived by perfusing with Ringer-Locke solution alone. The same depressant action was seen at 1/10,000 dilution but the effect was less than at 1/5000. Solutions are absorbed from the intestine in the rat without causing any observable damage to the mucosa. They are also readily absorbed after subcutaneous injection and the substance can be detected in the blood. It is excreted by the kidneys, the urine becoming bright yellow. At least 40–50 % appears in the urine in a still active form. *Human leucocytes* remain active in a 1/1000 solution for at least 3 hours.

It must be emphasised that the results of these preliminary tests have been obtained with an impure

substance and such slight toxic effects as have been noted may possibly be due, in part at least, to these impurities.

EFFECTS ON BACTERIA IN VITRO

In view of this slight evidence of tissue toxicity it is all the more striking that the substance in a dilution of one in several hundred thousand inhibits in vitro the growth of many micro-organisms, including anaerobes. Of those so far tested in this laboratory the following are sensitive to the inhibiting action of our preparation: *Clostridium welchii* (2 strains); *Cl. septique* (1 strain, Nat. coll. type-cultures No. 458); *Cl. œdematiens* (1 strain, N.C.T.C. No. 277); *C. diphtheriæ* (1 strain, mitis type); *Streptococcus pyogenes* (Lancefield group A); *Str. viridans* (1 strain from tooth); *Str. pneumoniæ* (type 8); staphylococci (3 strains). Penicillin is not immediately bactericidal but seems to interfere with multiplication.

THERAPEUTIC EFFECTS

From all the above tests it was clear that this substance possessed qualities which made it suitable for trial as a chemotherapeutic agent. Therapeutic tests were therefore done on mice infected with streptococci, staphylococci and *Cl. septique*; the results are summarised in the accompanying table, the preliminary trials on small numbers of mice being omitted.

Bacteriological methods: streptococcus and staphylococcus.—The staphylococcus was kept in culture in meat extract broth and the streptococcus in the same with serum. Both organisms were repeatedly passed through mice and were used for experiment 2–4 days after the last passage. The experimental infection was induced with 20–24 hour broth cultures injected intraperitoneally. According to opacity measurements with Brown's tubes, doses of 450 and 350 million cocci, living and dead, were given respectively in the two streptococcal experiments, and doses of 760 and 200 million in the staphylococcal experiments.

Pathogenic anaerobes.—The therapeutic effects were tried in mice infected with spores of *Cl. septique* in the manner described by Henderson and Gorer (1940). Attempts to carry out similar tests with *Cl. welchii* were temporarily abandoned owing to the difficulty of establishing in mice a type of infection which is both certainly fatal and allows adequate time before death for treatment to take effect. A spore suspension of *Cl. septique* was made by anaerobic growth at 37° C. for 48 hours on Dorset's egg slopes, suspension of the growth of each slope (surface about 15 sq. cm.) in about 1 c.cm. of sterile distilled water, centrifugalisation, once washing with distilled water, recentrifugalisation and resuspension in the original volume of distilled water. The suspension was then heated to 75° C. for one hour. The virulence of the suspension, when injected with an equal volume of 5% calcium chloride was roughly titrated by injection into the thigh muscle of mice, and a dose was chosen for the therapeutic experiment such as would kill for certain without being unnecessarily severe, viz., 0·05 c.cm. of the suspension diluted one in three, mixed with 0·05 c.cm. of the calcium chloride solution. This was injected into the thigh muscles of the 75 mice whose subsequent fate is recorded in the table.

Treatment.—The general principle has been to keep up an inhibitory concentration of the substance in the tissues of the body throughout the period of treatment by repeated subcutaneous injections. No extended tests have been made to determine the minimum effective quantities or the longest intervals possible between injections. The doses employed have been effective and not toxic; they may have been excessive. The solution contained 10 mg. per c.cm. of substance.

In the first streptococcal experiment the treatment was continued for 12 hours only. That this was inadequate was shown by deaths occurring during the arbitrarily chosen 10-day period. In the second experiment the time of treatment was lengthened, with improved results. In this and the two staphylococcal experiments injections were given 3-hourly for the first 32–37 hours, then at longer intervals.

In preliminary experiments with *Cl. septique* it was found that the infection could be satisfactorily held in check so long as penicillin was being given (i.e., for 2 days) but when the administration was stopped the infection developed. In the experiment quoted, therefore, the injections were given for 10 days, 3-hourly for 41 hours, then at longer intervals, and twice daily for the last 2 days of the period. No deaths have subsequently occurred (22 days after beginning of experiment).

The behaviour of the mice infected with streptococci and staphylococci was interesting. For some hours after the start of treatment they looked sick—some even appeared to be dying—but as the experiment went on they progressively improved till at the end of 24 hours in the case of the streptococci and about 36 to 48 hours with the staphylococci it was difficult or impossible to distinguish them from normal mice. The survivors of the *Cl. septique* infection on the other hand remained well throughout, except for a few in which leg lesions appeared near the site of injection and cleared up in a few hours.

Summarising the data given in the table we see that in the final streptococcus experiment (no. 2) whereas 25/25 controls died, 24/25 treated animals survived. With *Staphylococcus aureus* the final experiment (no. 2) shows 24/24 deaths of the controls and 21/24 survivals among the treated. Lastly, with *Cl. septique* when the larger doses of penicillin were given (bottom line) the figures are 25/25 control deaths and 24/25 treatment survivals.

CONCLUSIONS

The results are clear cut, and show that penicillin is active in vivo against at least three of the organisms inhibited in vitro. It would seem a reasonable hope that all organisms inhibited in high dilution in vitro will be found to be dealt with in vivo. Penicillin does not appear to be related to any chemotherapeutic substance at present in use and is particularly remarkable for its activity against the anaerobic organisms associated with gas gangrene.

In addition to the facilities provided by the university we have had financial assistance from the Rockefeller Foundation, the Medical Research Council and the Nuffield Trust. N. G. Heatley has held a Rockefeller fellowship. To all of these we wish to express our thanks. We also wish to acknowledge the technical assistance of D. S. Callow, G. Glister, S. A. Creswell, J. A. Kent, and E. Vincent.

REFERENCES

Clutterbuck, P. W., Lovell, R. and Ralstrick, H. (1932) *Biochem. J.* **26**, 1907.
Dubos, R. J. and Cattaneo, C. J. (1939) *J. exp. Med.* **70**, 249.
Fleming, A. (1929) *Brit. J. exp. Path.* **10**, 226.
Henderson, D. W. and Gorer, P. A. (1940) *J. Hyg., Camb.* **40**, 345.
Hotchkiss, R. D. and Dubos, R. J. (1940) *J. Biol. Chem.* **132**, 791, 793.
McLeod, C. M., Mirick, G. S. and Curnen, E. I. (1940) *Proc. Soc. exp. Biol.* **43**, 461.
Reid, R. D. (1935) *J. Bact.* **29**, 215.

MENINGOCOCCAL MENINGITIS STARTING AS DIABETIC COMA

BY CECIL W. WARD, M.B. Leeds
AND
ALBERT A. DRIVER, M.B. Leeds, D.P.H.
ASSISTANT MEDICAL OFFICERS AT SEACROFT HOSPITAL, LEEDS

THE following unusual case of meningococcal meningitis presented a difficult problem in diagnosis.

A well-developed athletic man, aged 19, was apparently in perfect health on the morning of Feb. 26. He had little appetite for his midday meal and in the afternoon complained of a slight headache and drowsiness. During the evening this drowsiness became more pronounced, and when first seen by the doctor at 10.30 P.M. he was comatose and could only be roused with great difficulty.

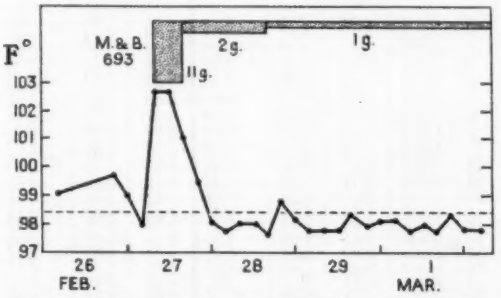
The patient was admitted to Seacroft Hospital about midnight. He did not respond to any stimulation. Pupils half dilated and did not react to light. Swallowing reflex present; knee, ankle, and abdominal reflexes present but sluggish; plantar responses not obtained. Uniform flaccidity of all four limbs, with no perceptible difference between the two sides. No rigidity of neck. Breathing deep and regular; smell of acetone in breath and dryness of tongue led to immediate catheterisation. Sugar 3% and acetone bodies found in urine. Temperature 99·8° F., pulse-rate 84, respiration-rate 32.

Diabetic coma having been diagnosed with some hesitation, the patient was given saline containing 25 g. of glucose to the pint by the intravenous drip method and 25 units of insulin

hypodermically. Half an hour later he was catheterised again and the bladder completely emptied. This sample of urine, like the first, contained acetone and 3% of sugar. The patient's condition was unchanged. Insulin 25 units was again given. An hour later the patient drew up his legs and groaned. A catheter specimen of urine still contained acetone and 3% of sugar. The dose of insulin was repeated. After a further hour and a half the patient was quite rational and asked for a drink. He complained of headache. His urine still contained 3% of sugar, but only a trace of acetone. Insulin 25 units was again given. Two hours later the urine contained only a trace of sugar and acetone, and a last dose of 10 units of insulin was given.

During this period of five hours the patient had received 3 pints of saline, containing 75 g. of glucose, and 110 units of insulin. Three hours after the last injection of insulin, blood-sugar was 190 mg. per 100 c.cm. Headache and photophobia now predominated, and by 2 P.M. the temperature had risen to 102·8° F. There was ptosis of the left eyelid, slight neck rigidity, and a doubtful positive Kernig's sign. Lumbar puncture was therefore performed under general anæsthesia. The cerebrospinal fluid was turbid and under increased pressure. Immediate examination of a film of the centrifuged deposit showed abundant necrotic pus cells and a few gram-negative intracellular diplococci. A twenty-four hours' culture produced a scanty growth of meningococci.

As soon as the patient had recovered from his anæsthetic, 6 c.cm. of M. & B. 693 Soluble was given intramuscularly, with 3 g. of M. & B. 693 by mouth. Thereafter 1 g. was given by mouth, two-hourly until 11 g. had been administered. The dose was then reduced to 1 g. four-hourly for a further twenty-four hours, and then to 1 g. thrice daily for a week. The temperature settled within twelve hours and remained normal (see figure). The diet consisted of 7 oz. of milk every two hours, some of which was vomited.



On Feb. 28 the man's general condition had much improved, but there was still a slight neck rigidity, and facial paralysis of lower motor neurone type had developed on the left side. The diet was changed to fruit juice, containing 10 g. of glucose, per feed. Next day he was given the ordinary hospital light diet, having remained sugar-free for two days. By March 1 his seventh-nerve palsy had cleared up; there was no neck rigidity, and Kernig's sign was absent. The light diet was increased, and the urine remained sugar-free. Except for a poor appetite the patient had no symptoms. During the next three days the man's lips were cyanosed through prolonged dosage with sulphapyridine, his appetite remained poor, and he was somewhat drowsy. On the night of the 3rd he had hiccup. By the 5th this new symptom had become almost continuous and could only be controlled for two hours by an injection of morphine gr. ¼. Next morning lumbar puncture was repeated under local anæsthesia. The fluid was clear but came off very slowly; the pressure was low and not much increased by jugular compression. On the morning of the 7th hiccup was still causing distress and a fine macular rash appeared on the backs of the hands. Treatment with M. & B. 693 was now stopped, and the hiccup soon ceased and did not recur. Next day the rash had faded completely, and the patient was a better colour and much brighter mentally. His appetite improved enormously and, instead of lying curled up when left alone, he sat up and began to read. Before his discharge on March 22 a sugar-tolerance test was carried out. The fasting blood-sugar was 100 mg. per 100 c.cm. An hour after giving 50 g. of glucose the figure was 109 mg.; at 2 hr. it was 83 mg. and at 3 hr. 103 mg. There was therefore no lag in the return of the blood-sugar to normal. No sugar was found in the urine.

DISCUSSION

Diabetic coma in a previously healthy person must be extremely rare as the first symptom of meningococcal meningitis. De Massary and Tockmann[1] say that glycosuria is very rare in cerebrospinal fever, and must be regarded as a sign of inflammation of the ventricles. The cause of the coma in our case is doubtful. It may have been due either to ketosis of diabetic origin or to meningitis. The fact that the patient recovered consciousness on insulin treatment and that for twenty-four hours no treatment was given for the meningitis suggests that the coma was due to the diabetes.

Two explanations of the hyperglycæmia are possible: (1) that pressure on the floor of the fourth ventricle caused the liver to yield up its glycogen, as shown in animal experiment by Claude Bernard; or (2) that an acute toxæmia, acting on an already underactive pancreas, caused failure of insulin output. The evidence favours the first view. The seventh-nerve paralysis shows that the base of the brain was affected. The fibres of this nerve, after passing round the nucleus of the sixth nerve, emerge between the olive and the restiform body—a course which must be near the point where puncture causes hyperglycæmia. An inflammatory lesion causing transient diabetes might therefore well involve the seventh nerve. Further, the glucose-tolerance test after recovery showed a normal type of curve, suggesting that the patient's islet tissue was not underactive before his illness. We believe that the diabetes at the onset of this case was probably due to pressure in the region of the floor of the fourth ventricle.

The hiccup might have been either a complication of meningitis or an unusual toxic effect of sulphapyridine. We suggest that it was more than a coincidence that hiccup developed along with the other well-recognised toxic effects of this drug—cyanosis of the lips and macular rash—and ceased so soon after treatment with M. & B. 693 was stopped.

SUMMARY

A case of meningococcal meningitis began with diabetic coma. After recovery the patient was shown not to be diabetic.

It is suggested that hyperglycæmia resulted from pressure in the region of the floor of the fourth ventricle. In this case hiccup appeared to be a toxic effect of sulphapyridine.

We thank Dr. E. C. Benn, medical superintendent of the hospital, for his advice and permission to publish the case, and Dr. G. M. Bonser for her help with the laboratory tests.

LOCKING WRIST

BY L. S. MICHAELIS, M.D. Berlin, L.R.C.P.E.

As far as I can ascertain the condition described here has not been observed before.

A woman aged about 45 had suffered from recurrent attacks of numbness, locking, pain and swelling in the ulnar half of her left wrist for 12 months. There had been no accident to the wrist or arm. She had been used to heavy work in the garden but had had to give it up lately because of the attacks which recently had become more frequent. Suddenly, without any known reason, either while at work or at night, the left wrist would become locked and a sudden movement was necessary to unlock it again. Neither the position of the wrist when locked nor the movement needed for unlocking seemed to be constant. She complained of pain and numbness at the back of the wrist and hand on the ulnar side, radiating into the 4th and 5th fingers. The pain was violent while the joint was locked and took a few days to disappear after the attack. Lately tenderness had been constant. A swelling extending over the ulnar half of the dorsum of the wrist appeared a few hours after the locking and took a few days to disappear.

Conservative treatment elsewhere had been without result.

Examination showed slender forearms, wrists and hands. There was slight wasting of the muscles of the left forearm.

1. De Massary and Tockmann, *Bull. Acad. Méd. Paris*, 1919, **3**, 786.

No swelling was present but there was localised tenderness at a point just inside the styloid process of the ulna between the extensor tendons. Movements of the wrist were free, painless and equal to those of the right wrist in all directions. No locking could be observed or provoked. But pain and numbness appeared when the forearm was laid in ¾ supination on the armrest of a chair, with the radius upwards. Change of position made the pain and numbness disappear. There was no sign of tenosynovitis or any other abnormal condition of the tendons or tendon sheaths. The distal radio-ulnar joint was a little more mobile in the left than the right wrist. There was no abnormal mobility of any of the small bones of the carpus.

Radiograms of both wrists, taken in two planes and different positions, did not show any sign of fracture, dislocation, necrosis or cysts in the carpal bones or any abnormality of the distal ends of the ulna or radius. The joint spaces were of equal width and radiologically empty. The sequence of locking with pain and unlocking by sudden movement, followed by swelling for a few days, which is familiar in other joints, made the presence of a loose body very likely. The only alternative, a torn cartilage of the wrist, was improbable in the absence of a trauma.

Operation. General anæsthetic. Dorso-ulnar incision (Langenbeck). The capsule was exposed between the tendon sheaths of the common extensor and the extensor dig. V. and opened. A loose body, attached to a narrow synovial fringe from the ulnar wall of the joint, slipped out and was easily removed. The wound was closed in layers, a volar splint applied and the arm put in a sling.

The loose body was the shape and size of a flat bean, measuring 10 × 5 × 2 mm. It consisted of cartilage throughout. The fringe to which it was attached was thin, narrow and about 15 mm. long.

Recovery was uneventful and the wrist could be freely moved a fortnight after the operation. The grip was strong, movements were painless, and no locking, swelling or pain have been observed since.

EFFECT OF VENESECTION ON THE CAPACITY OF THE LUNGS

By E. M. Glaser, M.D. Bratislava

VOLUNTARY ASSISTANT AT THE BRITISH POSTGRADUATE MEDICAL SCHOOL, HAMMERSMITH; AND

J. McMichael, M.D. Edin., F.R.C.P.E.

READER IN MEDICINE AT THE SCHOOL

THERE is a good body of evidence that estimations of the total capacity of the lungs may be used as an index in plethysmography of the lungs. The pulmonary congestion which appears in recumbency and in heart-failure is associated with a diminution of the total volume of air in the lungs, while the size of the thoracic cage remains unchanged (McMichael and McGibbon 1939, Hamilton and Morgan 1931–32). Vital capacity tends to decrease with these changes, but the changes in vital capacity are often less pronounced than those in the total lung volume. Changes in vital capacity, moreover, form a less certain index of changes in the volume of blood in the vessels of the lungs, for vital capacity may vary independently of the total lung volume, as in asthma and emphysema (Hurtado et al. 1934a, b).

Budelmann (1937, 1938) observed that venesection increased the vital capacity, and that the same effect was produced by congesting the veins of the limbs with tourniquets. It seems likely that these changes in vital capacity indicate converse alterations in the amount of blood contained in the vessels of the lungs. Budelmann, however, only published a selection of his observations, which does not allow a true estimation to be made of the quantitative effect. For this reason it seems desirable to repeat the measurements of vital capacity along with those of the total capacity of the lungs in a series of unselected normals.

MATERIALS AND METHODS

The vital capacity and the total lung volume were estimated with the Knipping spirometer, as adapted by McMichael (1939), for the determination of the capacity of the lungs by hydrogen dilution. The subjects were all in the recumbent position from the beginning of the observations until the final determination was made. Vital capacities were recorded two or three times until a constant figure was obtained. The observations were made on 25 (8 males and 17 female) healthy subjects who were acting as donors of blood in the present emergency. The amount of blood withdrawn by venesection was 360–380 c.cm., but in case 9 only 320 c.cm. was obtained. The ages ranged from 20 to 53 years, the age-distribution being as follows:—

Age 20–29	.. .. ..	11 cases
„ 30–39	.. .. ..	5 „
„ 40–53	.. .. ..	9 „

They were, without exception, coöperative and free from any emotional reactions. Blood was taken from the antecubital vein under local anæsthesia, and the determination of vital capacity and total volume of the lungs was completed within twenty minutes after the withdrawal of blood.

RESULTS

The figures for vital capacity and total volume of the lungs before and after bleeding are given in table I. Averages with statistical data are given in table II.

TABLE I—VOLUME OF AIR IN LUNGS BEFORE AND AFTER WITHDRAWAL OF 380 C.CM. OF BLOOD

Case	Height (cm.)	Vital capacity			Total lung volume		
		Before	After	Increase	Before	After	Increase
1	162·0	3·27	3·61	0·34	5·00	4·91	− 0·09
2	163·5	3·19	3·57	0·38	4·59	4·84	0·25
3	168·0	3·47	3·56	0·09	4·53	4·51	0·02
4	162·0	3·34	3·37	0·03	3·84	4·34	0·50
5	165·5	3·22	3·40	0·18	4·64	5·09	0·45
6	170·0	3·36	3·65	0·29	5·25	5·64	0·39
7	170·0	3·31	3·40	0·09	6·69	6·85	0·16
8	157·5	2·74	2·82	0·08	4·21	4·35	0·14
9	161·0	3·21	3·34	0·13	4·60	4·91	0·31
10	170·5	3·16	3·30	0·14	5·18	5·15	− 0·03
11	175·0	3·28	3·44	0·16	5·97	5·95	− 0·02
12	174·0	4·95	5·07	0·12	6·98	7·18	0·20
13	176·5	4·54	4·82	0·28	6·15	6·73	0·58
14	177·0	5·17	5·20	0·03	7·22	7·56	0·34
15	156·5	2·74	2·91	0·17	4·27	4·39	0·12
16	173·0	3·93	4·10	0·17	5·63	5·72	0·09
17	160·0	3·45	3·59	0·14	5·38	5·76	0·38
18	159·0	2·90	2·97	0·07	4·02	4·03	0·01
19	160·0	3·30	3·25	− 0·05	5·37	5·44	0·47
20	157·0	3·03	3·03	Nil	4·37	4·40	0·03
21	160·5	3·07	3·30	0·23	3·98	4·13	0·15
22	163·0	3·68	3·91	0·23	6·19	6·50	0·31
23	168·0	3·72	3·98	0·26	5·50	5·48	− 0·02
24	162·5	3·49	3·63	0·14	4·43	4·43	Nil
25	179·5	5·48	5·61	0·13	6·67	6·90	0·23

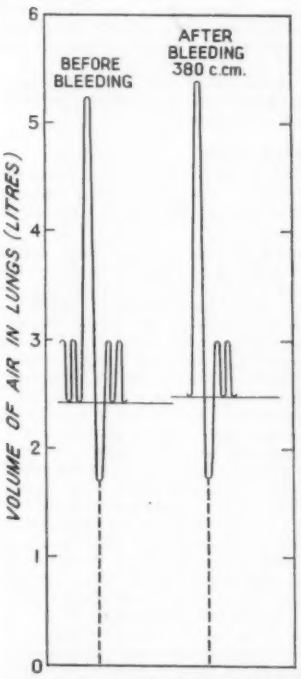
TABLE II—AVERAGE INCREASE IN VITAL CAPACITY AND IN TOTAL VOLUME OF LUNGS BEFORE AND AFTER BLEEDING

—	Average values		Mean increase	S.d.	S.e. mean
	Before	After			
T.L.V. litres	5·23	5·41	0·181	0·184	0·037
V.C. litres	3·56	3·71	0·153	0·099	0·020
R.A. % T.L.V. ..	31·9	31·1	—	—	—
F.R.A. % T.L.V. ..	46·7	44·6	—	—	—

T.L.V. = Total lung volume. V.C. = Vital capacity. R.A. = Residual air. F.R.A. = Functional residual air. S.d. = Standard deviation. S.e. mean = Standard error of mean.

The mean result is expressed diagrammatically in the accompanying figure.

It should be noted that the total lung volume is computed by adding the residual air, determined by a fairly complex procedure, to the vital capacity. The standard error of estimation of the residual air (0·09 litre) is much greater than the error of a vital-capacity measurement, which is direct and free from technical complexities. The greater margin of error in the measurements of total lung volume therefore explains the apparently less regular increase of total lung volume than of vital capacity in individual subjects



Average total lung volume before and after bleeding: continuous line, vital capacity; interrupted line, residual air.

(table I). The slight change in the relative value of the functional residual air indicates that the increase in total lung volume is mainly achieved by an increase in the amount of complemental air.

DISCUSSION

These results indicate that the volume of air in the fully expanded lungs increases by 180 c.cm. after a loss of 380 c.cm. of blood. This change in total capacity is paralleled by a slighter increase in the vital capacity. In view of the argument stated above, the most probable explanation of the change is the removal of blood from the pulmonary vascular bed. If this figure is correct, the vessels of the lungs give 47% of the blood removed in a venesection of this magnitude. That the vessels of the lungs diminish in volume by nearly half the amount of blood removed, whereas normally they contain no more than a fifth of the total quantity of blood in circulation, suggests either a very sensitive vasoconstrictor mechanism or even a true reservoir function.

The idea of blood reservoirs received its main impetus from the observation that the volume of the circulating blood in man underwent a very considerable increase under exposure to tropical temperatures (Barcroft 1925). Although the spleen was subsequently shown by Barcroft to be an important reservoir in the dog, it is difficult to believe that the spleen of man, which averages in weight less than 200 g., could supply any important quantity of blood to the organism in time of need. The necessity of postulating the existence of other blood stores has been realised, and various other organs have been suggested as reservoirs—e.g., the liver (Grab, Jannsen, and Rein 1931), the lungs (Hochrein and Keller 1932), the subpapillary plexus of veins in the skin (Wollheim 1927), and even the vessels of the pregnant uterus (Barcroft and Rothschild 1932). In his more recent book Barcroft (1934) broadens the concept of blood reservoirs to include not only circulatory culs de sac like the spleen but also side paths or shunts from the active circulation in which the blood may be circulating very slowly and blood channels of large calibre in which there may be relative stagnation of blood. In the event of vasoconstriction of these latter types of blood pool, the circulation through them is accelerated and more blood is added to active circulation.

Weiss and Blumgart (1928) showed that the lungs of man contain on an average nearly a litre of blood under resting conditions. Sjöstrand (1935, 1937) showed that the vessels of the lungs contain much more blood than is evident in ordinary histological preparations and widen out in places to form large sinuses. It is thus possible that the pulmonary vessels may act as a blood reservoir in the sense that they form a vascular bed of wide calibre, which may contract under certain conditions.

SUMMARY

(1) In normal subjects the withdrawal of 380 c.cm. of blood by venesection is accompanied by an increase in vital capacity averaging 153 c.cm. and an increase of 181 c.cm. in the total capacity of the lungs.

(2) These changes in the capacity of the lungs probably reflect corresponding changes in the volume of blood in the lungs. The vessels of the lungs possibly act as an important blood reservoir.

The expenses of this research were defrayed by a grant from the Medical Research Council. We are indebted to Mr. A. C. Pincock for technical aid.

REFERENCES

Barcroft, J. (1925) The Respiratory Function of the Blood, Part I. Cambridge.
— (1934) The Architecture of Physiological Function, Cambridge.
— and Rothschild, D. (1932) *J. Physiol.* **76**, 447.
Budelmann, G. (1937) *Klin. Wschr.* **16**, 704.
— (1938) *Ibid*, **17**, 1009.
Grab, W., Janssen, S. and Rein, H. (1931) *Ibid*, **10**, 1539.
Hamilton, W. F. and Morgan, A. B. (1931–32) *Amer. J. Physiol.* **99**, 526.
Hochrein, M. and Keller, C. L. (1932) *Arch. exp. Path. Pharmak.* **164**, 529, 552.
Hurtado, A., Fray, W. W., Kaltreider, N. L. and Brooks, W. D. W. (1934) *J. clin. Invest.* **13**, 1027.
— and Kaltreider, N. L. (1934b) *Ibid*, p. 1053.
McMichael, J. (1939) *Clin. Sci.* **4**, 167.
— and McGibbon, J. P. (1939) *Ibid*, p. 175.
Sjöstrand, F. and Sjöstrand, T. (1937) *Skand. Arch. Physiol.* **77**, 76.
Sjöstrand, T. (1935) *Ibid*, **71**, Supplement.
Weiss, S. and Blumgart, H. L. (1928) *J. clin. Invest.* **6**, 103.
Wollheim, E. (1927) *Klin. Wschr.* **6**, 2134.

Reviews of Books

Casualty Training and Organisation

Administration of Civil Defence Casualty Services. By G. B. SHIRLAW, L.R.C.P.E., assistant medical officer (A.R.P.) for Battersea. London: Secker and Warburg. Pp. 283. 8s. 6d.

THIS is a much needed outline of the organisation of the civil defence casualty service, written in a simple and understandable way. The book is divided into three parts, which has its advantages, but introduces some rather tiresome repetition. The author points out how obsolete is the teaching on hæmorrhage and the tourniquet given in current first-aid manuals. It is a pity that the modified Esmarch bandage tourniquet does not appear among his diagrams. This is easily and cheaply made from cycle or motor-car inner tubes, or may be improvised from elastic braces. It is simple to apply and is unlikely to cause any serious crushing damage to the limb. Everyone will agree that the early treatment for shock is highly important, but the provision of mobile hot-water bottle units and canteens seems an unnecessary refinement, which will lead to further overcrowding of an already large mechanised force, and the difficulties arising from additional traffic control will outweigh their value.

Dr. Shirlaw's criticism of the Government scheme is mainly confined to his almost fanatical conception of classification and evacuation points. From a practical point of view there can seldom be more than a preliminary rough classification in the immediate neighbourhood of the incident to be followed by improving classification as circumstances allow. Few surgeons would suggest that they could accurately evaluate the seriousness of most casualties, except where conditions of safety, good lighting and reasonable diagnostic equipment can be provided. Most cases requiring immediate surgery at or near the incident fall into the obvious classification of uncontrolled hæmorrhage, obstruction of the air-passages, open or tension pneumothorax, and possibly almost completed amputation. These cases can be classified by the ordinary first-aid personnel, and where possible will be dealt with by a mobile unit; almost all other cases can wait until proper hospital facilities for classification are available. The need for satisfactory protection of the vital parts of these front-line hospitals is rightly brought out, though the importance of having an alternative to glass windows has not been given sufficient attention. The ideal formation of hospital cities must recommend itself to all medical men, but will demand so much long-distance transport that the military authorities would probably object to their formation.

On general administration and post routine Dr. Shirlaw has collected much valuable detail and makes

many good suggestions. His depot training programmes do not seem to give enough time for cleaning stations and vehicles. This should be a routine duty for all, and not in any sense a special fatigue. To avoid boredom considerable variation of times of training duties and recreation periods can be allowed at the week-ends. It is important to remember the provision of adequate training instruction for part-time volunteers when making up any routine.

There are valuable hints on the storage of equipment, but the advice that all replacement equipment and materials should be stored in one building is not in accordance with the usual air-raid strategy, since all equipment might be lost in one unlucky incident.

Official History of the Australian Army Medical Services in the War of 1914-18

Vol. II. *The Western Front.* By Col. A. G. BUTLER, D.S.O., V.D., M.B. Camb. Canberra: Australian War Memorial. Pp. 1010. 21*s.*

THE time at which this work comes from the Australian War Memorial at Canberra is apt. It is the record of heroic work done twenty years ago to keep or to restore fitness among the soldiers of the Dominion. The men who did the work thought they had done it for all time. This was to be a record of past history. Now they and their sons have elected to do the job again. As a guide the events of this spring have deprived it of a part of its value. This is because war has changed. Details of what the Australians did in March, 1918, in the battle of Amiens are not of much value for what is happening today. With principles it is different. The young men who have to carry on their fathers' work must have some to start from. Not that they will find them here laid down in block capitals; but they will come before them as they read such chapters as those on evolution in the medical service during attrition warfare and evacuation within the army zone. The chapter on the general surgery of wounds might well be read by any young man up for his final fellowship before studying the more recent experiences in Spain. While casualties must always be within our thoughts, sanitation is, in war, always before our eyes. The four chapters on the human grindstone, repairs and replacements and on preventive medicine are very good indeed, and no young medical officer should miss them. Everyone who aspires to high administrative control, or to the direction, strategical or tactical, of surgical units should have this book at his elbow. It contains two essential things to books of guidance—clear foot-notes with references and a well-arranged index.

Dynamics of Inflammation

By VALY MENKIN, department of pathology, Harvard University medical school. New York: Macmillan Company. Pp. 244. $4.50.

THIS is one of a series of projected monographs on experimental biology designed to summarise the new facts and to stimulate research. Inflammation has always been a fascinating subject but until lately it has been difficult to see much beyond the studies of Cohnheim and Metchnikoff. Now the new and exact methods of physiology, biochemistry and immunology have opened new paths, and here, in most readable form, are the findings of the many workers in this field. The part played by the capillaries and the factors which cause increased permeability and the migration of leucocytes are described and the technique of isolating leucotaxine is given in detail. How and why the cellular pattern varies in inflammation is another interesting question and there is already a good deal known about the effect of temperature, osmotic pressure and pH on the degree and nature of phagocytosis. The fixation of irritants, the place of allergy and anaphylaxis and the rôle of the lymphatics have been put to experimental test and there is much to learn about all of them. The thorny problem of bacterial invasiveness and virulence also comes under review and if there are many debatable points there are no dull ones. Throughout the subject is treated from a physiological rather than a histological point of view and it is because this is an attempt to unravel the skein of mechanisms that we get the true impression of a sequence of living and changing processes and not that of a series of dead photomicrographs. Dr. Menkin is an expert on the experimental side of inflammation but he also holds a fair balance for views which do not happen to be his own.

The book is not only stimulating and informative, it is a promise that soon we shall know more of the delicate rhythm of tissue reactions to irritants.

Surgery of the Alimentary Tract

By Sir HUGH DEVINE, M.S. Melb., F.R.A.C.S., formerly senior surgeon, St. Vincent's Hospital clinical school, Melbourne. Bristol: John Wright and Sons. Pp. 1046. 63*s.*

THIS is the type of book of which one wishes more were written. It is the record of work after many years of clinical experience, and the statements made are all based on actual illnesses and the observed results of treatment. The author is original not only in his methods but in his exposition of his subject. It is a delight to read such a book, the more so as the author often arouses our criticisms. There are satisfactory discussions of surgical problems as they are presented to the surgeon as well as detailed description of operative procedure. Sir Hugh Devine insists on operating within 48 hours for a bleeding gastric ulcer if surgery is considered necessary, but he also recommends that for speed a prepyloric closure of the stomach should be done. Most surgeons think that this operation should be avoided whenever possible. To undo a gastrojejunostomy for hæmorrhage and to restore the parts to their natural form is fraught with a great risk of the ulcer in the duodenum recurring, and the ulcer is not so easily dealt with by the physician as the author seems to think. The method of using the ingenious abdominal retractor invented by the author is described in detail and there is, of course, a full account of his defunctioning operation for excision of the colon. He must have a small hand if it will pass through a hole in the abdomen 2 in. long—the average hand needs one at least twice this length. The defunctioning operations and also the restorative operation for carcinoma of the rectum are open to criticism from several points of view but they are practical procedures in the hands of the author. The book will undoubtedly assume a prominent place in the operating surgeon's library.

Surgical Anatomy

(4th ed.) By GRANT MASSIE, M.S. Lond., F.R.C.S. London: J. and A. Churchill. Pp. 472. 21*s.*

Mr. Massie's book has now firmly established itself on the student's shelf. It is large enough to contain all that is necessary for the final examinations, and yet small enough to entice the reader to read on, which he will find himself doing from sheer interest and the attractive presentation of the subject. This edition has been thoroughly revised.

Notes on Clinical Laboratory Methods

(4th ed.) By the Standing Committee on Laboratory Methods, University of Glasgow. Glasgow: John Smith and Son. Pp. 89. 2*s.* 3*d.*

THIS booklet describes the various chemical methods employed in the clinical laboratories of Glasgow University. It deals with analyses of urine, blood, sputum, gastric contents, fæces, hair, nails and cerebrospinal fluid, with notes on staining technique. Only titration methods of chemical analysis are described, which will limit the usefulness of the book by other laboratories. It is concisely written and will serve the student well for reference.

Starch and its Derivatives

By J. A. RADLEY, M.Sc., A.I.C. London: Chapman and Hall. Pp. 346. 22*s.*

THIS book is divided into four sections: the structure and reactions, the manufacture, the industrial applications and the examination and analysis of starch and its products. Why bread goes stale is considered in the chapter on the physical chemistry of starch, while two other chapters deal with the estimation of starch and with the determination of the activity of enzyme preparations. There is an informative chapter on the structure of starch, and a valuable list of references.

BREAST-FEEDING IN WAR-TIME

IT is of the utmost importance that the mother who is breast-feeding her baby shall be able to continue whatever happens.

Anxiety and air-raids may cause temporary loss of breast-milk. The mother must be encouraged not to lose confidence; she needs to be told that her milk will come back, and that if she has a suitable temporary substitute feed always at hand she need not fear that her baby will suffer during the period of interruption.

A tin of modified dried milk food (liquid milk is obviously out of the question), a vacuum flask of boiled water, and a feeding bottle—these in a small hand-case will arm her against every emergency.

A feed for her baby can then be quickly and easily prepared anywhere and at any time. With no other method of feeding is such simplicity possible.

Mothers must be prepared. The progress of the breast-fed baby must not be halted during any temporary loss of the mother's milk.

Issued by

Glaxo Laboratories Ltd., Greenford, Middlesex, makers of "Ostermilk"

INJECTION TREATMENT OF VARICOSE VEINS

The safest, most effective sclerosing agent

Ethamolin — a recent product of the Glaxo Laboratories — shows specific advantages over any other sclerosing agent for varicose veins. A firm adherent thrombus is formed without injection pain or allergic reactions. Sloughing is not caused if the solution escapes round the vein. And because Ethamolin is a definite chemical substance, dosage is precise (0.5—2 cc., depending on the size of the vein. Up to 5 cc. may be given in divided dosage, at one visit). The extensive use of Ethamolin in hospitals and in private practice gives abundant evidence to support these claims. Indeed, Ethamolin has been described as the safest and most efficient sclerosing agent yet discovered.

ETHAMOLIN

PRODUCT OF THE GLAXO LABORATORIES

An aqueous solution of ethanolamine oleate (5%) with 2% benzyl alchohol. Bottles of 15 cc., 3/- and 30 cc., 5/-. These prices (not applicable in Eire) are subject to usual professional discount.

GLAXO LABORATORIES LTD., GREENFORD, MIDDX. BYRon 3434

Continue to Prescribe Allenburys Products

EVERY EFFORT WILL BE MADE TO ENSURE THAT ADEQUATE SUPPLIES OF ALLENBURYS SPECIALITIES OF THE SAME DEPENDABLE QUALITY ARE AVAILABLE THROUGHOUT THE WAR PERIOD.

I-so-gel Granules

Natural vegetable material. Absorb many times their volume of water. Swell into a firm, gelatinous mass which stimulates natural intestinal movements and soothes inflamed intestinal mucous membrane. Indicated in chronic constipation, hæmorrhoids, colitis, dysentery, and allied gastro-intestinal disorders, and after colostomy.

Action purely mechanical.

Sugar-free. Ideal for diabetics.

In bottles at 3/- and 5/6, and in tins at 10/6 and 32/-

Eucortone

Extract of adrenal cortex, containing the hormone, cortin. Highly successful in Addison's disease, marasmus, and acute toxæmia of burns. Other indications for its successful use include hyperemesis gravidarum, neurasthenia, and psoriasis.

Biologically standardized on adrenalectomized animals. Practically free from nitrogen and adrenaline. Free from irritant and toxic substance. Sterile. Administered intramuscularly, intravenously (in crises), and subcutaneously (in chronic cases).

In rubber-capped bottles of 10 c.cm., 20/-

Digitalin Granules A&H

Physiologically standardized, British-prepared *Digitaline cristalisée* (French Pharmacopœia). Contain the most active principle of digitalis leaves. Because of its reputation for uniform activity, *Digitaline cristalisée* has long been popular, particularly on the Continent, and is recommended by high authority where galenical preparations of digitalis have failed.

In Two Strengths:

gr. $\frac{1}{120}$ ($\frac{1}{2}$ mg.) in tubes of 40, 5/-, and 100, 12/-

gr. $\frac{1}{240}$ ($\frac{1}{4}$ mg.) in tubes of 40, 2/9, and 100. 6/-

Supplied in bottles of 250, also, for dispensing.

Euvalerol Elixirs

Prepared from fresh valerian root by a special process which ensures retention of the active principles contained in the volatile oil but eliminates the objectionable odour.

A—contains the odourless preparation in Aromatic Elixir. 1 fl. oz. is equivalent to approximately 1 fl. dr. of Tinct. Valer. Ammon., B.P.

B—is Elixir A with phenyl barbitone, gr. $\frac{1}{4}$, in each fl. dr. and with a lighter tint.

C—is A with ammonium bromide, gr. 30, strontium bromide, gr. 15, and a small amount of sal volatile, in each fl. oz. It has a darker tint than the two other Elixirs.

For Prescribing:

In bottles of 4 oz. at 2/6, and 8 oz. at 4/6.

For Dispensing: In bottles of 40 oz. and 80 oz.

Descriptive literature of any of these products will be sent post free on application.

ALLEN & HANBURYS LTD.
LONDON · E · 2
PHONE: BISHOPSGATE 3201 (12 lines). WIRES: "GREENBURYS, BETH, LONDON"

THE LANCET

LONDON: SATURDAY, AUGUST 24, 1940

DOCTORS IN INDUSTRY

A STATE of war quickens the nation's pulse and tends to lessen resistance of the people to radical changes. This should be remembered in predicting the reactions of employers and workers to a recent order [1] by the Minister of Labour and National Service. Under this order the occupier of a factory in which any work for the Crown is being done may be required by the chief inspector of factories on behalf of the minister to appoint doctors, nurses and supervisors to look after the health and well-being of the workers. This may be a war-time measure but it indicates state recognition of the policy that preventive medicine and welfare are a function of management. To practitioners it opens up a new avenue in medicine and profoundly affects their relationship to industry. Many trained nurses are now employed in factories and their numbers are steadily increasing, but the appointment of whole-time or even part-time medical officers has not been as general in this country as in the United States of America. At the moment about 50 doctors are employed whole time by the larger firms. Most of these appointments were made after the last war and BRIDGE [2] in his review of the effects of factory legislation from 1833 to 1933 attributes them to the realisation during the period 1914–1918 that the worker's health had economic value. "It seems to me," he wrote, "that during this period it was realised for the first time that conditions special to the occupation were not the only cause of industrial disease, but that other factors—fatigue, undernourishment, and other conditions met with both inside and outside the time of employment—were as important in the production of illness as those produced by the materials handled."

More whole-time factory doctors might have been appointed had it not been for our national insurance system whereby each worker is entitled to medical advice from his panel doctor. Further, 1700 practitioners are acting as examining surgeons whose main duties consist in medical examination of young entrants, periodical examination of workers engaged in certain dangerous processes, and certification under the Workmen's Compensation Acts of scheduled industrial diseases. Nine medical men are occupied whole time in examining workers entering industries where there is a risk of silicosis or asbestosis and issuing certificates for compensation where disease has resulted. Finally there are 11 whole-time medical inspectors whose knowledge and experience of industrial diseases entitles them to investigate conditions adverse to health and well-being in any factory throughout the country. It would be impossible for these inspectors to exercise continuous medical supervision over individual factories, but under the order it will obviously be their duty to see that medical supervision is efficient.

Factory managers will no doubt ask what advantage over the present system is to be expected from the new medical service whether part or whole time. How, for instance, can the indoor doctor fill up his time? Obviously the calls on the doctor would vary with the number employed and the needs of the particular factory. But what can he do in a factory to conserve the health of the workers and so to maintain or increase output? Besides day-to-day examination of workers who are sick or exposed to special risks he can undertake the education, singly or in groups, of workers as a whole in matters of hygiene; he can promote liaison between the factory services and the general medical and hospital services; he can supervise the treatment of accidents, reduce the number of septic cases to a minimum, follow up the course of fractures and other serious injuries and illnesses, and see that the patients return to work in the shortest time consistent with adequate treatment and rehabilitation. He can deal with cases of minor illness and injury in such a way that many will be able to remain at work. In these and other ways the loss of working time can be diminished. In war-time it is proper to regard as war casualties all accidents and illnesses which keep workers, especially skilled men, away from the factory, and the whole of medical and nursing experience should be applied to them. A doctor who spends his whole time at a factory can get to know the workers personally and with tact and personality he can do much to ease their burdens and encourage them to do their best. He needs to understand the various factory processes, their specific health risks and the environmental conditions of each workshop. He will not have much control over hours of work but he can observe where the hours are too long for a particular worker and likely to diminish his working capacity. Having gained the confidence of both management and workers he can contribute to smooth working by a study of the human element in workers and supervisors. He can also suggest improvements in hygiene and help the engineers in carrying them out. He can examine new workers referred to him by the labour managers and those who return to work after accident or illness in order to see that they are not put on jobs beyond their strength. Complete health records can be kept of workers in the several departments, and these when analysed may suggest places in the factory where improvement in the working conditions can reasonably be made. Sometimes there may even be an opportunity for research work, but for the time at least he will be busy with classes in first-aid and with the medical aspects of air-raid precautions.

This is only a partial reply to the question how the factory and its output will benefit by the new medical service. These things must not only be done but vitally important for their success is the spirit in which they are done. The Minister's order demands from industry and medicine a whole-hearted coöperation, tolerance and goodwill, without which it will come to nought. Of good augury is the fact that it will be directed by the factory department of the Home Office which has been

1. S.R. and O. 1940. No. 1325. The Factories (Medical and Welfare Services) Order 1940, dated July 16, 1940, made by the Minister of Labour and National Service under Regulation 60 of the Defence (General) Regulations 1939. H.M. Stationery Office. 1d.
2. Bridge, J. C. Annual report of the Chief Inspector of Factories, 1932, p. 55.

transferred for this purpose to the Ministry of Labour and National Service. The department's accumulated knowledge of factory conditions will be used to the utmost.

IMMUNITY TO DRUGS

EXCEPT among pharmacologists and the less sophisticated type of criminal strychnine has ceased to attract much attention. When the President of the Royal College of Physicians [1] remarked that "some of the discredit into which drug treatment has fallen in this generation is no doubt due to the fact that we use medicines more timidly than our forefathers," he may have had in mind strychnine among other drugs. Certainly Prof. HILL ABRAHAM was wont to electrify his clinical clerks by saying "Gentlemen, if you are going to use strychnine for your patients, give it 'em till they twitch." And now, even in the calm, sequestered haunts of pharmacologists rumour raises its head; for it is whispered that strychnine may soon forfeit the distinction of the official sanction of the Pharmacopœial Commissioners. It must be confessed that there is little strychnine can do that cannot be done equally well by other drugs. Only a few years ago strychnine was almost reinstated as an antidote for barbitone poisoning, but the substitution of picrotoxin pushed it back again into comparative obscurity. But "Bless thee, Bottom! bless thee! thou art translated"; here is the alkaloid again, and this time in the hands of the sleuths of immunology.

There is, of course, nothing new about the use of drugs, in contradistinction to biological products, as antigens. When EHRLICH carried out his classical work on immunity in 1891 he used the exceedingly poisonous ricin contained in castor-oil seeds. By graduating the dose of this antigen he was able to create a high degree of immunity in the rabbit. Presumably this is due to the formation of "anti-ricin" in the tissues, for the immunity is specific and can be transferred passively to another animal by serum injection. This remarkable piece of research produced a valuable liaison between the pharmacologist and the immunologist, and much work has since been done which aims at explaining the idiosyncratic reactions to drugs. Thus DAWSON, SANDERS and TOMLINSON [2] have investigated the spontaneously developed specific human allergy to quinine and its isomers and derivatives. The fascinating possibilities of conjugating a drug with a protein so that the drug acts as a hapten were revealed by LANDSTEINER and VAN DER SCHEER.[3] The new work by HOOKER and BOYD [4] is actually a sequel to these earlier investigations.

It appears that merely to inject an alkaloidal salt along with a foreign protein into an animal does not suffice to produce a specific anti-alkaloid. To become antigenic determinants, as HOOKER and BOYD explain, most haptens must be chemically linked with an antigenic carrier or strongly adsorbed to particulate matter. They mention, in passing, that they failed to produce anti-morphine, and they formed the impression that their failure was due to coupling the prosthetic group with "purified" as distinct from crude protein. With strychnine, however, they were successful, and antibodies specific for this alkaloid were obtained from rabbits injected with mono-aminostrychnine-azohæmocyanin. Although it cannot be maintained that strychnine poisoning is common the discovery and isolation of anti-strychnine, which might be used as an antidote, would undoubtedly give rise to that satisfaction which is always felt when specific therapy replaces symptomatic treatment. HOOKER and BOYD consider it probable that antisera could be prepared and concentrated to a potency sufficient to *prevent* the lethal effects of small doses of some of the alkaloids. This is a guarded statement, and the authors make it clear that their own sera were too weak to neutralise the lethal effect of strychnine in mice. They go on to point out that several litres of antiserum containing, as theirs did, 0·32 mg. of antibody per ml. would be needed to neutralise the average lethal dose for man. Their commendable modesty should not allow us to overlook the importance of their work. To touch the prize but not to gain it has been the experience of many distinguished researchers in pharmacology and kindred subjects. The mind harks back to the splendid failure of ABEL to isolate adrenaline at the close of the 19th century. How near he was to complete success was revealed a few years later by TAKAMINE who slightly modified ABEL'S method and isolated the free base. Barely a generation ago syphilis was treated with relatively enormous volumes of solutions of organic arsenicals, but it was realised almost instantaneously that something fundamental had been accomplished, and that little more could be expected but the elaboration of the germ-idea. Again, WHITEHORN'S [5] curious discovery that "Permutit" removes even minute traces of adrenaline from mixtures containing it was skilfully applied by SWINGLE and PFFIFNER [6] to the isolation of the adrenal cortical hormone. Such a concatenation of events, though apparently fortuitous, has important results for the therapeutist. Thus pure vitamin C is now within the reach of almost every patient requiring it; but it is not long since a pellet containing a milligramme of ascorbic acid was a pearl of great price. It may be necessary to remind HOOKER and BOYD that "we cannot eat the fruit while the tree is in blossom." Modifications of technique are inevitable, and with them the yield of antibody to various drugs and similar substances may easily be multiplied a thousandfold.

Not the least valuable part of this paper is the illuminating discussion on molecular structure in relation to antigenic activity. In recent years we have witnessed extraordinary progress in the elucidation of the chemistry of these substances; it may well prove to have been a happy coincidence that this work is running parallel to that on antibodies to alkaloids. If alkaloids can be made to exert a haptenic action, then clearly there are possibilities to be explored in connexion with the sex hormones and certain carcinogenic agents. Doubtless many workers are already brooding on these projects and

1. Hutchison, R. The Elements of Medical Treatment, London, 1927, p. 6.
2. Dawson, W. T., Sanders, J. P. and Tomlinson, L. M. *J. Immunol.* 1933, **24**, 173.
3. Landsteiner, K. and van der Scheer, J. *J. exp. Med.* 1932, **55**, 781; 1934, **59**, 769.
4. Hooker, S. B. and Boyd, W. C. *J. Immunol.* 1940, **38**, 479.
5. Whitehorn, J. C. *J. biol. Chem.* 1923, **56**, 751.
6. Swingle, W. W. and Pfiffner, J. J. *Medicine, Baltimore*, 1932, **2**, 371.

have begun to feel their way along this thorny path. A careful study of the work of HOOKER and BOYD may help them on their way.

AUTHORITY, OBSERVATION AND EXPERIMENT

A MEMORIAL lecturer is expected to begin by eulogising the founder of the lectureship, and since he seldom knows more of the patron than what he can crib from past lectures the opening sentences of the orations are apt to be tedious. So it must have come as a shock to the more sophisticated of his audience when Professor TOPLEY in his Linacre lecture [1] had nothing to say of its founder which was complimentary. Indeed, the ghost of Linacre must have blushed uncomfortably to hear his own lecturer say that he failed to do more harm in his life-time because his times would not permit it, to give him no thanks for instituting his two lectureships, and to cast some suspicion on the ultimate value of his other great work—the foundation of the Royal College of Physicians. Yet those who invited Professor TOPLEY to give this lecture must have known what to expect, for his life's work has been directed to destroying the tradition of Linacre, to ousting from medicine its reliance on authority and to replacing traditional practice by applied science. No argument is needed to convince the modern world that the practice of medicine *should* be founded on science and not on authority. Is it not the first authoritative statement that the student hears when he enters the sanctuary of medicine at the austere ceremony of an October afternoon? Does he not have impressed on him throughout his student days that his practice should be founded on his own observations and deductions from truths established by experiment? And is he not ploughed if he observes what his examiners cannot see, or makes deduction from experiments which they do not understand?

"To force experiment and observation into sharply separated categories is almost as dangerous a heresy as the science and art antithesis," says Professor TOPLEY. It has always seemed that the real cause of the lag in the application of experiment is the failure of the scientist to recognise that nature is the only experimentalist who never errs; the so-called proofs furnished by man-controlled experiments must be checked against the results of natural experiment, which can only be gathered by observation. Nobody knows better than Professor TOPLEY that the value of experiment lies in the opportunity it affords for observation, and the only excuse for controlled experiment is that it enables known disturbing factors to be eliminated. Some research workers are annoyed because what they have found to be true in the cage and the test-tube is not immediately applied to the human field of medicine, but before this can be done a series of observations are necessary to find out if what works in controlled samples works also in uncontrolled bulk. This link is weak because it is almost impossible to train clinical observers without giving them bias. "If we do not train our students to think for themselves—perhaps it would be fairer to say, if we do not allow them to think for themselves—no opportunities that we provide in later life will be of much avail," says Professor TOPLEY. But is it possible to be trained and free? In any case only the most highly intelligent can achieve mental freedom in adult life whatever their training has been.

1. Authority, Observation and Experiment in Medicine. By W. W. C. Topley. The Linacre Lecture, 1940. Cambridge University Press. Pp. 46. 1s. 6d.

BLAST INJURIES OF THE LUNGS

Two papers that appear in this issue go far to elucidate the pathological changes and clinical symptoms and signs that may be produced when the brunt of the blast from high-explosive falls on the chest. ZUCKERMAN, who has been working at Oxford under the ægis of the research and experiments department of the Ministry of Home Security, defines the physical nature of blast and has proved that its effect on the pulmonary tissue is the result of the impact of the pressure on the chest wall rather than on the alveoli via the respiratory passages. In animals he has demonstrated that the fundamental lesion is a hæmorrhagic exudate into the alveolar and interstitial tissue. These traumatic hæmorrhages vary in degree according to the distance of the animals from the charge and are most numerous in the lines of the ribs and on the front of the lungs. The lesions may run together and the bronchi may fill with blood, leading to consolidation or atelectasis of a portion of the lung. There is evidence that the lesions may be localised to the side facing the explosion and that protection can be afforded by clothing the body with a suitable material.

On the clinical side DEAN, THOMAS and ALLISON have studied at a naval auxiliary hospital 27 victims of high-explosive bombing. These men were often burned and immersed as well as exposed to blast, but it seems fairly certain that the pulmonary changes that they showed, with one possible exception, can be attributed to the blast alone. Respiratory symptoms were not as a rule evident on the day of the bombing but appeared after an interval of from two to five days. These consisted of cough and expectoration, shortness of breath and restlessness; hæmoptysis was not met with in this investigation but bloodstained sputum has been seen in severe cases elsewhere. Physical signs were indefinite, but one curious observation made in 15 of the patients was the "ballooning" of the lower part of the chest. No satisfactory explanation of this phenomenon is forthcoming. DEAN and his colleagues draw attention to the importance of a radiogram in making a diagnosis, and radiological abnormalities were noticed in 14 out of their 27 patients.

Some important conclusions may be drawn from these two articles. It is now established that the lungs can be damaged by blast without there being any injury to the body surface. In view of the delay before symptoms develop and the indefinite physical signs there is a danger that the condition will go unrecognised and the accompanying shock be put down to other causes. In cases of asphyxia due to this cause the Schafer method of artificial respiration will prove not only ineffective but even harmful, and this will have to be made clear to first-aid workers. Finally, the work supplies another

good reason why the civilian population should take shelter in an air-raid, and makes it clear that when no adequate cover is available the effects of high explosive on the lungs can be greatly lessened by adopting the approved prone position on the ground, preferably close behind some substantial structure.

Annotations

PENICILLIN

THE preliminary report in this issue from the Oxford School of Pathology on the bactericidal properties of penicillin, an active principle obtained from the mould *Penicillium notatum*, has considerable interest on account of the demonstration that the substance is active in vivo as well as in vitro and thus has claims as a chemotherapeutic agent. Since Fleming described it in 1929 penicillin has been used by bacteriologists, as a ten-day-old broth-culture filtrate of the mould, for the selective isolation of gram-negative bacteria and particularly Pfeiffer's bacillus. Its disadvantages were the difficulty in obtaining a uniformly potent filtrate from the parent culture and a certain instability of the active principle. The present investigation marks a distinct advance in that penicillin has been prepared as a water-soluble powder which both as solid and in solution is reasonably stable, though it is not stated whether the substance is heat-labile. Thus bacteriologists may find it particularly useful as an addendum to the "cough-plate" for the isolation of *Bacillus pertussis*. There is no claim that penicillin has been obtained in pure form or any clue as to its chemistry. It is absorbed from the gut and subcutaneous tissues and excreted in the urine. It has very little toxicity for laboratory animals although repeated large doses produced some neutropenia in the rat. No exact details are given of in-vitro bactericidal tests, except that the substance inhibits in a dilution of one in several hundred thousand the growth of such pathogens as the gas-gangrene anaerobes, *Streptococcus pyogenes*, staphylococcus, pneumococcus and the diphtheria bacillus. In mice experimentally infected with *Strep. pyogenes*, *Staphylococcus aureus* and *Clostridium septique* treatment begun at the time of infection and continued at short intervals for 2–4 days in the case of the pyogenic cocci and 10 days for *Cl. septique* saved most of the animals whereas all controls died. No attempt was made to find out the optimum therapeutic dose; the individual doses used, injected subcutaneously as a 1% solution, varied from 0·5–2 mg. Nor apparently was treatment of an already established infection—a more critical test of efficiency—attempted. Enough has been done, however, to show that in penicillin we have a new potentially powerful chemotherapeutic agent. Whether it acts selectively on gram-positive bacteria like the "gramacidin" of Dubos (see *Lancet*, 1940, **1**, 1172), and if so what relation if any it has to the violet antiseptic dyes, what is its chemical nature and how it acts, and whether it can be prepared on a commercial scale are problems to which the Oxford pathologists are doubtless addressing themselves.

A CAMPAIGN OF DEFENCE

MEDICAL officers of health often find parents suspicious and recalcitrant about diphtheria immunisation, but it is an old observation that keen leadership attracts keen support. Dr. W. B. Stott, medical officer of health, and Dr. H. Lyndhurst Duke report [1] that they have succeeded in immunising over 90% of school-children in a county area against diphtheria. This high percentage was not achieved without labour, sympathy, perseverance and argument. The area included Cuckfield rural district with a population of 24,440 and twenty-two elementary schools, Cuckfield urban district with a population of 13,600 and five elementary schools, and Burgess Hill urban district with a population of 6850 and three elementary schools. The beginning of their campaign, in 1935, was not promising. The general practitioners of the area, who coöperated ably throughout the campaign, had agreed to give the course of three injections for 5*s*. —this was before the British Medical Association had fixed the fee at 2*s*. 6*d*. for each injection—the councils had undertaken to provide the prophylactic free of charge, and the parents were informed through the schools, the infant welfare centres and the district nurses; but only 80 children came to be immunised. In 1936 the Cuckfield rural district council agreed to pay 5*s*. for each child immunised, and during the next two years the other two councils followed suit. In 1936 a circular letter was sent to the parents of elementary school-children in the Cuckfield rural district, and as a result 37% of the children went to the doctors for injection. It seemed probable that more parents would consent if the immunisation were done at school; the teachers and general practitioners willingly coöperated, and the parents were told and asked to complete an acceptance form. This brought in a further 40% of school-children. Only 23% remained; the district nurses paid personal visits to their parents, and six months from the start of the campaign 90% of the elementary school-children in that rural district had been immunised. By the end of 1937 a similar campaign in the Cuckfield urban district had netted in 84% of school-children. Then an attack was made on the children below school age in the rural district. Circulars were sent to the parents through the infant welfare centres and women's institutes, but only about 25% of children were brought for treatment. When war broke out a large number of London children were evacuated to the area, and Dr. Stott decided to intensify the campaign, particularly among the group of children between 1 and 5 years of age. District nurses, assisted by voluntary workers, visited all parents who had not accepted and invited them to take their children either to their own doctor or to a special clinic arranged at the welfare centre. Some preferred to have the job done at home, in which case the doctor visited them accompanied by a nurse. Sometimes it was possible to win over a doubting parent and immunise the child on one and the same visit; wet days, washing days and the dinner-hour turned out to be the most propitious occasions for the onslaught. The mother was notified beforehand, by postcard. At the schools the interest of the teacher had a great influence on the number of acceptances; at one school the percentage rose from 35 to 90 following an appeal to the head-teacher to take a personal interest in the scheme. The dogged spirit of the immunising team finally achieved the following results: children immunised in Cuckfield rural district, 86% between the ages of 1 and 5, and 93% of school-children; in Cuckfield urban district, 89% between the ages of 1 and 5, and 93% of school-children; in Burgess Hill urban district, 87% between the ages of 1 and 5 and 91% of school-children. The writers give a few pieces of advice based on their experience. Signs of alarm and distress in the child should be anticipated and if possible forestalled; the parent is usually more upset than the child, in such cases, and may not bring him to finish the course. Sooner or later, in a long series of inoculations, a child will faint or be sick; a bottle of smelling salts is a useful item in the doctor's bag. In persuading unwilling parents there is no need to spoil a splendid case by exaggeration; inoculation is not a guarantee against infection, and if any such claim is made for it the first failure will damage the whole campaign. It is safe to emphasise the rareness of unpleasant reactions and the absence of any disfigurement, temporary or permanent.

1. Publ. Hlth, Lond. August, 1940, p. 234.

PSYCHIATRIC VIEW OF NATIONAL BEHAVIOUR

IN our mentally sick world there is a new pleasure for some of us in accounting for the other man's motives in the technical language of modern psychiatry. Strengthen this new weapon by a knowledge of crowd psychology and we may begin to acquire an understanding of the mental processes, or forces, that threaten civilisation, an understanding that can be useful, however, only when we have enough insight to apply to ourselves, personally and nationally, the technical knowledge we are so ready to use on the other man. Prof. Edward A. Strecker of Pennsylvania, in presenting this function of mental hygiene in his new book,[1] uses the tried and accepted postulates of psychiatry as guides to the study of man's behaviour in what we still hopefully regard as the world of sanity—a sanity which he questions when he makes a hypothetical schizophrenic compare his own fantasies with our realities. There are many reminders of our immediate problems in this book —for example, the note that, if symbols used in crowd and mob making could be desensitised by even a small leaven of thought, propaganda would lose much of its effectiveness, followed by the remark that counter-propaganda, unless it is willing to abandon ethical scruples, is rarely successful. Yet there is a thread of optimism in it all. As the productive need for hygiene and sanitation was born from the plagues of the Middle Ages, so, Prof. Strecker hopes, the plagues of our civilisation will stimulate a wider dissemination of the teachings of mental hygiene.

ABACTERIAL PYURIA

ANY patient whose urine contains pus but remains sterile on culture must be suspected of having tuberculosis of the urinary tract. It should be remembered, however, that where a patient with an acute or chronic urinary infection is being given a course of a urinary antiseptic the urine may be sterile on culture because bacterial growth has been inhibited by the antiseptic either in the bladder or the specimen bottle, and examination several days after the drug has been stopped may then reveal a flourishing growth of organisms. On the other hand, patients with urinary tuberculosis often have both pus and coliform organisms in their urine, and the true nature of their disease may then only be suspected when the organisms disappear under treatment while the symptoms and pyuria persist. Of 78 cases of sterile pyuria reviewed by Moore [2] a resolving urinary infection was the cause in 11, and 24 were tuberculous. In 20 patients the pyuria was associated with a stone, though in many such cases there is a superadded infection. In acute and chronic nephritis pus cells are rarely plentiful in the urine, but in chronic or healed pyelonephritis pyuria is of great diagnostic significance, and some of the 9 cases of "toxic nephritis" in Moore's series were probably examples of this condition. Another type of lesion which may lead to sterile pyuria is infection in structures adjacent to the bladder, such as a cervicitis or subacute prostatitis; in the latter prostatic massage may reveal the causative organism.

When all these common causes of sterile pyuria have been excluded there remain a few cases which have come to be regarded as true abacterial pyuria. Moore reports 5 such cases, in all of whom symptoms of urinary infection were present but no organism could be grown from the urine by any recognised technique. Urological investigation in 2 of these patients suggested infection of the upper urinary tract, in 1 the bladder was involved, and in the other 2 there was evidence of prostatitis. The occurrence of a non-tuberculous sterile pyuria has been recognised for many years, but urologists differ as to its frequency and even more as to its significance. Is it a true clinical entity, to be diagnosed only by the exclusion of all other causes, or is it merely an indication that investigation has failed to reveal the underlying lesion? Moore believes that it is a disease in itself. His view is supported chiefly by the results of treatment. The disappearance of all symptoms and the pyuria after the intravenous injection of neoarsphenamine has been the outstanding feature of similar cases published in the past, and in Moore's 5 cases, all of whom had failed to respond to ordinary therapeutic measures, a few injections of Novarsenobenzol led to rapid and permanent relief. This remedy has been widely and successfully used in the treatment of chronic staphylococcal infections of the urinary tract. When it is injected both formaldehyde and organic arsenical compounds appear in the urine, and both have been credited with the resultant cure. It has also been shown that its injection may turn an alkaline urine acid, and it would be interesting to know what is the pH of the urine in cases of "abacterial pyuria," and whether ammoniacal decomposition of the urine is present in this condition. However this may be, it seems that the injection of neoarsphenamine presents a safe and valuable therapeutic test.

CHELSEA PHYSIC GARDEN

THE physic garden at Chelsea, of rather less than four acres in area, has for more than 260 years been devoted to the promotion of scientific pharmacology. The garden, at first leased to the Apothecaries Company in 1673 by Lord Cheyne, was in 1722 generously conveyed to that body by Sir Hans Sloane, who had acquired the Manor of Chelsea. Under the management of the Apothecaries it won the commendation of John Evelyn and was visited by Professor Herman of Leyden during the XVIIth century. It was the attraction of this garden that drew the great Linnæus to England in 1736. Among its illustrious curators were Watts, Philip Miller, Forsyth, Fairbairn, Fortune and Moore; while among its directors or lecturers were the well-known names of Curtis, Wheeler, Ward and Lindley. After passing through many vicissitudes, and in 1893 being on the verge of collapse, the Apothecaries Company relinquished their trust to the Charity Commissioners. The Royal Society and the Royal College of Physicians having refused the reversion of the garden to them a scheme was established on Feb. 21, 1899, by the Commission whereby the administration of the garden was vested in the City Parochial Foundation, its management being entrusted to a representative committee. Generous annual subventions are made by the Trustees of the Foundation for the maintenance of the garden, its laboratory, library and houses, while contributions are also received from the Board of Education, the University of London, the College of Physicians and the Society of Apothecaries. The objects of the garden, as originally prescribed, were "for the manifestation of the glory of God in the works of creation" and to enable students to distinguish between those plants which are useful and those that are harmful. In the more prosaic language of the scheme of 1899 the objects of the garden are defined as "scientific instruction and research in botany including vegetable physiology and instruction in technical pharmacology as far as the culture of medicinal plants is concerned." Valuable researches are carried on chiefly by students of the Imperial College of Science and living specimens are supplied to medical schools and colleges for the teaching of botany and materia medica. In plots arranged according to their orders are to be found aconite, belladonna, hyoscyamus, digitalis, datura, conium, cannabis, jalap, castor and croton oil, opium, coca, mezereon, gentian, podophyllin, senega, ipecacuanha and all the medicinal plants of the British Pharmacopœia. Since the outbreak of war attention has been directed to belladonna, digi-

1. Beyond the Clinical Frontiers. By Edward A. Strecker, Sc.D., M.D., professor of psychiatry in the schools of medicine, University of Pennsylvania. London: Chapman and Hall. 1940. Pp. 210. 9s. 6d.
2. Moore, T. *Proc. R. Soc. Med.* July, 1940, p. 593.

talis, the opium poppy and the common home-grown medicinal herbs and roots. A fine crop of the leaves of the first-named was gladly accepted and utilised by one of the large teaching hospitals of London. Every summer since 1921 a public Chadwick lecture has been delivered, generally in the open air and illustrated by specimens from the garden, on some subject relative to plants in health and disease, or the influence of plants on the health and diseases of man. Among these lecturers have been Sir Arthur Hill, Professor Blackman, Sir David Prain, Sir Daniel Hall, Professor Dixon, Dame Helen Gwynne-Vaughan, Sir John Russell, Sir William Willcox, Professor Salisbury, Professor Ruggles Gates and Mr. E. A. Bowles.

THE POLIO VIRUS

SINCE Landsteiner and Popper[1] showed that the virus of infantile paralysis would infect monkeys, these animals have been used in large numbers in experimental studies of the disease. In America money for this work has been poured out from the President's Birthday Ball fund and other special funds, but the progress made has been disappointingly slow in view of the enormous resources of skill, time and money applied to the task. But Nature often fails to yield up her secrets to direct frontal attacks of this sort, and it is from workers not supported by ad-hoc funds that new clues have lately come, offering hopes of sweeping advances.

Last year Armstrong,[2] of the United States Public Health Service, succeeded in infecting a native American rodent, the Eastern cotton-rat (*Sigmodon hispidus*) with a strain of human poliomyelitis which had been passed through monkeys (Lansing strain); with other strains of virus he failed. The Lansing strain has now been passed serially through 45 cotton-rats, producing in them a flaccid paralysis with increasing regularity. Transfer back again to monkeys after 3, 6, 15 and 33 cotton-rat passages gave rise to "severe poliomyelitis." Serological tests gave evidence that sera of monkeys immune to certain poliomyelitis strains would neutralise the virus in cotton-rats. That all sera would not do so is not surprising in view of the recent demonstration that serological differences exist among poliomyelitis strains. After the 7th passage through cotton-rats, Armstrong[3] succeeded in transferring the infection to white mice, producing flaccid paralysis after an incubation period of three to seven days; the virus after 6 mouse transfers would infect monkeys. The pathological picture in cotton-rats, mice and monkeys receiving cotton-rat virus was the usual one of poliomyelitis in rhesus monkeys. The evidence that the disease has really been transferred to rodents is thus good. Jungeblut and Sanders[4] have now succeeded in infecting cotton-rats and subsequently mice with virus of another human strain.

The need for caution is, however, brought out by work done at the Rockefeller Institute. Theiler reported in 1934 that a flaccid paralysis caused by a virus developed sporadically in mice there. The picture was like that of poliomyelitis and the disease has been referred to as mouse poliomyelitis, mouse encephalomyelitis or Theiler's disease. The virus was found to be of a very small size (9–13 mμ) which is shared only by the viruses of human poliomyelitis and foot-and-mouth disease.[5] Lately Olitsky,[6] in view of recent work on the occurrence of poliomyelitis virus in human fæces, tested fæces from paralysed mice and found Theiler's virus to be present not only in fæces of such mice but in those of almost all his normal mice 30 days old. In younger mice virus was absent from the fæces and it was also less easy to recover it from older adults. It appears from later work done by Olitsky[7] and by Theiler and Gard[8] that in their stock of mice the virus is regularly present in the intestinal wall and fæces, but not in the brain or elsewhere, during "childhood." Mice of all ages are susceptible to intracerebral inoculation, decreasingly so as they grow older, but encephalomyelitis occurs spontaneously as a very rare event.

Findings like these make us think furiously about the epidemiology of infantile paralysis in man; the occurrence of that virus in human stools and sewage takes on a new importance. It now seems that Theiler's findings and those of Armstrong may be linked up. Theiler's virus will infect cotton-rats,[8] though not monkeys. Though no serological relation between the diseases of mouse and man has been demonstrated, it appears that mice recovered from the spontaneous disease are resistant to the Armstrong cotton-rat virus. Further work is needed to prove up to the hilt that Armstrong's virus is really that of human poliomyelitis, but it seems likely from the available evidence that the polio viruses of man and mouse will turn out to be related ones attacking different species, analogous to some of the pox viruses or the influenzas of swine and man. We are justified in hoping that fresh advances are soon to come. Armstrong[2] reports, it may be added, that the "cotton-rat is not vicious and multiplies readily in captivity."

ANÆSTHESIA AND THE CAROTID BODY

IT is of course highly desirable that before he administers an anæsthetic the anæsthetist should have the fullest possible knowledge of the patient's bodily and mental peculiarities, and the practice, now common but unknown only a few years ago, of interviewing the patient beforehand is much to be commended. Nevertheless it is possible to overdo even this precaution, and one may question the advisability of one particular examination recommended by Madan.[9] He alludes to recently acquired knowledge of the action of anæsthetics on the carotid body and of the symptoms arising when the carotid reflex is evoked—slowing of the pulse, a fall in blood-pressure, and even syncope. The easiest way to evoke these symptoms is by pressing on the neck in the region of the carotid body, what is in fact called garrotting. Now it is sound advice to instruct the young anæsthetist not to press hard or long over the carotid body, as he may well do in earnest and uninstructed endeavours to keep the lower jaw forward. To teach him, however, that in order to detect an abnormally susceptible carotid body he should make a practice before operations of pressing with his fingers for a couple of minutes over the patient's carotid body is surely going too far. The reflex will not be set up during anæsthesia unless there is undue pressure on the carotid body or the dose of anæsthetic is excessive. To avoid it there should be no necessity to subject the patient to a highly unpleasant preliminary manœuvre.

The next issue of THE LANCET will contain among other things the time-honoured guide to medical students starting on their career and the opportunities offered to them. Medical training has lost none of its significance from the preoccupations of the moment; the guide may suggest to readers whether it has altered for the better or the worse. We commend its study to all who are interested in medical education.

The Index and title-page to Vol. I, 1940, which was completed with the issue of June 29, is now ready. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

---

1. Landsteiner, K. and Popper, E. *Z. ImmunForsch.* 1909, **2**, 377.
2. Armstrong, C. *Publ. Hlth Rep., Wash.* 1939, **54**, 1719.
3. Armstrong, *Ibid*, p. 2302.
4. Jungeblut, C. W. and Sanders, M. *Proc. Soc. exp. Biol., N.Y.* 1940, **44**, 375.
5. Theiler, M. *J. exp. Med.* 1937, **65**, 705.
6. Olitsky, P. K. *Proc. Soc. exp. Biol., N.Y.* 1939, **41**, 434.
7. Olitsky, *Ibid*, 1940, **43**, 296.
8. Theiler and Gard, S. *J. exp. Med.* 1940, **72**, 79.
9. Madan, K. E. *Brit. J. Anæsth.* July, 1940, p. 65.

Special Articles

THE BIRTH OF SOCIAL PSYCHIATRY

By EDWARD GLOVER, M.D. Glasg.

DIRECTOR OF THE LONDON CLINIC OF PSYCHO-ANALYSIS AND OF THE INSTITUTE FOR TREATMENT OF DELINQUENCY

FOR the second time in a quarter of a century the conventional frontiers of medicine have been rudely disturbed by the impact of war. By the end of 1918 the lesson had been learned that many complicated organic dysfunctions can be induced by changes in the social milieu, provided, of course, these environmental changes are profound enough to shake the individual's deeper instinctual organisation. This was the lesson of "shell-shock," "war-neurosis," and "war-shock." But in a comparatively short time the lesson was forgotten. Most physicians, not without a sigh of relief, retired within their accustomed territories, and a great opportunity was lost of effecting an alliance between the science of medicine and that of social psychology.

* * *

In the present war the urgent necessity for this alliance has again been demonstrated but from a most unexpected quarter. To be sure, we have heard a lot about war-neuroses, and the organisation of mental services has allowed a number of medical psychologists to take up the study of these disorders at the point where twenty years ago they laid it down. But as is so often the case, revolutions in medical science are initiated from without. In this instance the initiative has been seized by the Ministry of Information! No doubt the Ministry is not fully aware of the momentous precedent it has established; its officials are naturally more concerned with the functions of war-time news-giving and news-getting. Be that as it may, the decision to utilise the National Institute of Economic and Social Research in order to conduct a war-time social survey was a ringing blow struck for psychological medicine.

The recent commotion in press and Parliament over the employment of "Cooper's Snoopers" has obscured this issue. Despite the minister's effective vindication of the method in the House of Commons the impression no doubt still remains in some quarters that, even if the press were uninformed as to the nature of and reasons for the survey, they were engaged in a praiseworthy effort to safeguard the liberties of the subject from a kind of interference that might in unscrupulous hands be turned to sinister use. The fact that instead of defending Magna Carta they had discovered a mare's nest, that so far from being undemocratic the Social Survey is a comparatively exact instrument for the expression of democratic feeling, that it permits the rapid uncovering of avoidable sources of friction, that by so doing it can lead to a considerable strengthening of national morale—all this, though true enough, is beside the point. For the first time in history a government has officially recognised that the state of public opinion is as important an index of the health of the community as a full anamnesis in the case of individual illness. Without denying the social or political significance of public opinion, the Ministry of Information has established that group feeling is a medico-psychological concern and that it calls for instruments of precision in diagnosis.

Curiously enough justification for this view came also from an unexpected, and much less savoury, quarter. For years Dr. Goebbels has been running his propaganda machine on the assumption that the health of a nation can be vitally damaged by the dissemination of false news, rumour and suspicion, to say nothing of playing on the fear, credulity and guilt-feeling of peaceful and gullible populations. We ourselves have been able to demonstrate how fear, rumour and suspicion run in direct ratio to the stress of war news and in inverse ratio to its accuracy. But if our psychiatrists had been more sociologically minded it would not have required the activities of Dr. Goebbels to ram the point home. It could have been foretold by study of the behaviour of psycho-neurotic and psychotic types in peace-time. All these war-time social manifestations have their almost exact counterpart in the morbid anxieties, fabrications, illusions, ideas of reference or positive delusion-formations that are commonplaces of individual psychology. And just as in the case of individual psychotherapy, where a distinction can be drawn between the treatment of environmental conditions and the treatment of (endopsychic) emotional factors, so, with the help of the War-time Social Survey, it is possible to distinguish between the various frictions and war-time hardships which can in many cases be eliminated by common-sense means, and those for which there is no remedy save the knowledge that they are less grievous than the dangers willingly faced by our armies in the field.

* * *

This war has established conclusively the case for a new social psychiatry. All that remains is for the new method to become generally recognised as a friendly and protective procedure.

Fortunately it has been shown that the vast majority of people visited give the (trained) investigators a friendly and coöperative reception. It would be interesting to find whether the number of those who resent the attentions of doctors is as low as 2%. No doubt there are many more who would resent the decennial census. Indeed it is worth while speculating on the deeper causes of the press campaign. It would be much too cynical a view to suggest that it was activated by professional jealousy. Certainly the press gains much of its influence through the satisfaction of human curiosity; and it might be maintained that some of its acolytes are not always deterred from making investigations by the fact that the subject of the investigation dislikes the process. The issue is a deeper one. Individual psychology has shown that in certain types it is hard to draw the line between an exaggerated desire for privacy (the "shut-in" type) and paranoid reactions of "reference." One may well surmise that a similar difficulty holds in the case of social reactions and that suspicions of undue interference are easier to arouse than convictions of social helpfulness; particularly in war-time. Perhaps the best solution to the controversy would be to acknowledge with thankfulness that the British press is always ready to defend the right of the individual to privacy; but at the same time to admit that for once in a way the Ministry of Information has given an indisputable lead to the sometimes backward science of medical psychology.

The matter however does not end here. Medical practitioners throughout the country must be encouraged to take up their new war-time responsibilities. They should have their fingers not only on the pulses of their individual patients but on the social pulse of the war-time community in which they live. They must rub up their psychiatry a little, and with the help of intuition and commonsense learn to detect the ebb and flow of morale under the stresses of war. Certainly no section of the community has a better chance of combining social psychotherapy with their everyday avocations.

CONVOCATION COMES TO LIFE

THOSE who think the nation has lost interest in its control of the lesser public or semi-public bodies should ponder over the meeting of convocation of the University of London on July 20. It was sufficiently remarkable in that graduates estimated at between 350 and 400 gave up their Saturday afternoon for it; but in London convocation is a form of academic democracy because it may discuss any subject relating to the university and declare its opinion thereon to the court or to the senate. It did so very definitely on certain emergency statutes of the senate which might have made it possible for the functions of convocation to be suspended for the period of the war and which made a change in its internal economy without previously consulting convocation. Convocation politely but firmly informed the senate that while it realised that it might be impossible to hold all its meetings as in peace-time it did not believe it would be impossible for it ever to meet and that it did not consider any such emergency statute should be drafted.

The other point of disagreement may have more far-reaching consequences. The senate had without con-

sulting convocation passed an emergency statute changing the mode of election of its deputy chairman and had put it into force before convocation had ever had an opportunity of commenting on it. Since this officer has no function in the university outside convocation, the statute amending his mode of election came into the category of purely internal economy of that body, which proceeded to pass a resolution disagreeing with it; and went on to amend its own standing orders. In this way convocation has laid down the principle that, while in times of great upheaval the senate may without notice have to make changes which affect both convocation and any other part of the university, convocation shall be absolutely self-governing on any point of its internal economy that affects no other part of the university.

The driving force in the laying down of these democratic principles came from a young organisation called the University of London Society which aims, among other things, to make convocation more active and effective in the discussion of all matters relating to the university and to educational life. The society hopes to include in its membership all graduates interested in their university, irrespective of creed, sex or politics and to enable each individual graduate to exert his or her influence in university affairs. Although some of its members could not be heard in the body of the hall, the vigour of their speeches, and the way in which demands to know the exact wording of an existing statute were immediately satisfied, showed their enthusiasm. The youth of the body was evidenced by the way in which its members raised points of order. Contentious as the meeting was at times it never lost its good humour and this was largely because the chairman never lost his.

SCOTLAND

GAS WARFARE

In his Honyman Gillespie lecture on gas warfare in Edinburgh last week Prof. J. P. Kendall deprecated the exaggerated talk of the horrors and dangers of gas warfare disseminated in books, by the press, in the cinema and by other channels. It was quite true that a ton of mustard gas was sufficient to kill 45,000,000 people, but they would have to stand closely packed together with their mouths open and their tongues out waiting for it. Indeed, ignorance was the prime cause of fear and the danger of gas lay in surprise. In the first gas attack on the Western Front in the last war 168 tons of chlorine were released causing 5000 deaths, but at the end of the war it was taking 8 tons to kill one man. Since the soldier in the field was much more vulnerable than the civilian in his home, more than this would be needed to kill one civilian. The only reason for using gas was the hope of creating panic, and Professor Kendall was satisfied that the attitude of the public was much improved since last year. In order to reach a toxic concentration of arsene in cities a damp, warm, windless day was needed and such days were rare in Edinburgh. If arsene was used, the only people who would suffer would be those who strolled about in the streets without gas masks. Anyone in a house above street level with a gas mask on would be safe. People often asked whether there was no other gas more toxic than mustard against which we should be defenceless. Only about 30 chemical substances known were suitable for use as poison gas and only 6–10 of these had proved to be worth while; almost all the likely compounds and substitutions had been tried. No compound would ever be discovered which was more dangerous than mustard. The casualties in mustard-gas factories in 1918 were higher than in any units on the Western Front and the discoverer of a new and more toxic gas would be the first casualty. Nothing brought greater odium on the Germans than the introduction of gas warfare, but it acted as a boomerang on themselves, for the cloudy gases, particularly chlorine, are effective only in the absence of respirators; they require a favourable wind, and in France the prevailing wind was from the west so that the Germans were more often exposed to gas than the Allies. Mustard gas is most potent against people with blond skins, and unfortunately for them the Germans are a blond race. The American modification of arsene, adamsite, was almost ready for use at the armistice, and if it had been introduced it would have created terrible havoc because the Germans were unable to provide the necessary additions to their respirators. Professor Kendall exploded the myth of German super-chemists; there had always been equally skilled chemists in other countries, including our own. Of recent years many of the finest German chemists had been expelled from Germany and some of these were now working here. The Germans must know that they are under a greater handicap than they were during the last war; a wonderful opportunity was presented to them for the use of gas at Dunkirk, where conditions were as nearly ideal as possible, and it was significant that they did not use gas there. But when in time to come they see that the game is up they may take any chance of sudden success; if they do use gas we should rejoice in it as a sign that they are desperate. We are protected and prepared against mustard or any other known gas. He drew a comparison between the horror evoked by the introduction of gunpowder and that evoked by the introduction of gas. Although it may excite horror each new form of warfare is actually more humane than its predecessors—for example, the high-speed rifle bullet produces a cleaner and less mutilating wound than a spear or sword. The chance of gas casualties surviving is much higher than casualties of "ordinary warfare" in which 25 were killed of each hundred wounded. In the last war gas killed only 7 of every hundred who were injured by it, and even that was in the early days; at the end of the war only 2% died. As regards the after-effects of mustard, permanent blindness was rare, although temporary blindness had been common. The proportion of cases of blindness was only one in 2000 affected, whereas by other wounds it was one in 200. The liability of gas cases to tuberculosis had been completely disproved both by American and British figures. Permanent morbidity also was rare, for even including the bad cases, 94% returned to duty. Chemical warfare was therefore, in Professor Kendall's view, the most humane form of warfare yet devised.

NEW PROFESSOR OF PUBLIC HEALTH IN GLASGOW

Dr. J. M. Mackintosh, at present chief medical officer to the Department of Health for Scotland, has been appointed to the chair of public health at Glasgow University. The appointment was made in consultation with the corporation of the city of Glasgow, which is to share in the payment of the salary and will receive in return the benefit of Dr. Mackintosh's research and advice in public-health matters. Dr. Mackintosh, who is 49, was educated in Glasgow, where he graduated M.A., M.B., Ch.B., and later M.D. He took his D.P.H. in London and is also a barrister-at-law (Gray's Inn). After serving in the last war he was a medical officer to the Ministry of Pensions and later held public-health appointments in Dorset, Burton-on-Trent, Leicestershire and Northampton, and became the chief medical officer in 1937. During the last three years he has naturally been concerned largely with the adjustment of the Scottish hospital and other medical services to war conditions. Indeed, the development of the E.M.S. in Scotland has been largely directed and controlled by him.

AN IRISH HOSPITALS SWEEPSTAKE

Our Irish correspondent writes: As was to be expected international events have interfered with the series of Irish hospitals sweepstakes to such an extent as to render the one held recently little more than a shadow of those which preceded it. The promoters recognised that this would be the case, and decided not to attempt to push the sale of tickets outside Ireland. The result, nevertheless, has been such as to encourage the Associated Hospitals Committee to continue a series on this restricted scale during the war. The amount realised for the hospitals from the sweepstake held this month was £13,653. It has been announced on behalf of the hospitals committee that the next sweep will be held in October on the Irish Cesarewitch, to be run at the Curragh on Oct. 28. The value of the race is to be specially increased for this occasion. The

committee thinks it of the greatest importance to maintain the machinery of the sweepstakes in existence till better times come, and therefore they hope to be able to continue the series at any rate throughout 1941. The total sum which has accrued to the hospitals from the thirty sweepstakes which have now been held approaches £14,000,000. The highest figure for any one sweep was reached by the one on the Derby in 1932, when £779,899 resulted. In recent years the average has been between £450,000 and £500,000 from each sweepstake.

Public Health

Feeding as a Function of Education

Circular 1520 of the Board of Education is important in itself, but more so for what lies behind it. Its avowed purpose is to stimulate local education authorities to make full use of the powers they possess to help the nutrition of children attending state-aided schools by supplying meals and milk, either free or at a low cost, to those who are poorly fed, and by arranging for children whose parents can afford to feed them well to have satisfactory meals at school in comfort and conviviality.

The former circulars of the board on the feeding of school-children carried the impression that what the local education committees were allowed to do in connexion with feeding was a charity granted reluctantly to get over a difficulty which was not strictly educational, and most local authorities did as little as they could under this impression. In view of the history of public assistance in England this attitude was understandable and was indeed but a survival of the school-board and board-school frame of mind which has hampered public education from its early days and from which the Board of Education has never quite freed itself. The board indeed suffers from its title, for the British people dislike boards. When we have a Ministry of Education the central department will perhaps command greater respect. Circular 1520, though somewhat verbose and perhaps too insistent on the present emergency, has a different character. The paragraph on meals for children coming from a distance, though not mandatory, certainly insists that this provision is a necessary factor in education, and a school to which many children have to come from a distance cannot be considered efficient unless it is made. The milk-in-schools scheme came in as a trade measure to help the milk business, it was advertised as a public-health measure, and in the present circular we get the first indication that it might be an educational measure and that the board could foster it, not as a side line thrust on it, but as one of its legitimate functions.

The circular throughout pleads for the expansion of communal feeding. The arguments used mainly relate to the present emergency, and for the time being are strong enough to carry the point. But communal feeding can be urged from the purely educational standpoint, for it teaches children to live together and develops their manners. Its nutritional value is of course great, for it enables better, more palatable and more varied dietary to be obtained at a lower price than is possible in private home feeding; but it can, or should, teach thrift —the avoidance of food waste—which is one of the favourite vices of the English, and prevents the development of faddiness about food which is one of the worst diseases of children. Though the circular starts with free meals for necessitous undernourished children it develops into something quite different, for after the first paragraph the adjectives "necessitous" and "undernourished" disappear and no difference is made between "free" and "on payment" so far as the children are concerned. The supply of free meals to necessitous children could never be other than a relief measure, but the supply of meals to all children, for which the parents in a position to do so are asked to contribute to the school mess, is a different matter with high educational value.

Points from School Reports

We hear much of dirty heads and uncleanliness, but the expressions used are vague and we are seldom given enough detailed information to judge whether what is meant is increasing or diminishing. We therefore commend a table in the report of Dr. V. T. Thierens on the uncleanliness of the children of *Blackburn*. Of 2869 children, 269 had nits in their hair, but none had living lice; only one head—that of a boy—is reported as dirty. Twelve children, eight of whom were boys, had dirty bodies and only eight, four of each sex, were flea-bitten. None had body lice. What is meant by "clean" can be gauged by the complete freedom from living vermin and the remarkable rarity of flea-bites. The children were those routine inspected, so they were cleaned up for the purpose. In some quarters this cleansing for the doctor's visit is treated as though it were cheating, whereas it is a great tribute to the popular appreciation of inspection and one of the most satisfactory of its results. No amount of soap will efface flea-bites, so the rate of flea-bitten children is a measure of permanent cleanliness, not only of persons but of households. This rate is seldom recorded. Fleas caught on the clothing and bodies of children are more often cat or dog flea (*Ctenocephalus*) than the human flea (*Pulex irritans*) though information on this point is meagre. In Blackburn the percentages of parents who attend medical inspection are, for infants 80, for intermediate 60, for leaver girls 22 and for leaver boys 12. In 1939 the percentage of children who left school with healthy mouths was 82·09, the highest yet registered, and includes all the leavers except those for whom treatment was refused.

Dr. W. F. W. Betenson reports that in *Breconshire* there were 6885 children on the elementary-school roll of whom 3716 were routine inspected in 1939. He gives a complete tabulation of all crippling defects in children aged 5–16 years in this small rural county. There are 442 names on the register, roughly 1 child in 20. Of these 186 suffer from flat-feet, 89 from postural defects, 34 from scoliosis and 40 from deformed feet. These defects account for nine-elevenths of all orthopædic cases and cannot be called crippling in the social meaning of that word, for all but 2 of the children are fit for normal education. Of the seriously crippled children 10 are suitable for education in special day schools and 10 require education in residential schools. There were 24 cases of rickety deformities, all slight; of infantile paralysis, 4 slight cases, 5 moderate, and 3 severe; these show the extent of the two commonest causes of crippling, the first disappearing rapidly, the second increasing in numbers but not in severity.

INFECTIOUS DISEASE IN ENGLAND AND WALES

DURING THE WEEK ENDED AUG. 3, 1940

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1502; whooping-cough, 818; diphtheria, 814; enteric fever, 119 (20 at Exeter); measles (excluding rubella), 9312; pneumonia (primary or influenzal), 425; puerperal pyrexia, 146; cerebrospinal fever, 142; poliomyelitis, 25; polio-encephalitis, 8; encephalitis lethargica, 2; dysentery, 42; ophthalmia neonatorum, 85. No case of cholera, plague, or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Councils on Aug. 2 was 661, made up of: scarlet fever, 130; diphtheria, 130; measles, 22; whooping-cough, 20; enteritis, 61; chicken-pox, 40; erysipelas, 25; mumps, 16; poliomyelitis, 1; dysentery, 1; cerebrospinal fever, 28; puerperal sepsis, 22; enteric fevers, 47; german measles, 3; other diseases (non-infectious), 36; not yet diagnosed, 79.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 1 (0) from enteric fever, 3 (0) from scarlet fever, 2 (0) from whooping-cough, 6 (0) from measles, 13 (0) from diphtheria, 29 (7) from diarrhœa and enteritis under 2 years, and 11 (0) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever was reported from Leyton (Greater London also reported two deaths). Liverpool and Birkenhead each had 4 deaths from diarrhœa. There were 3 deaths from diphtheria at Liverpool.

The number of stillbirths notified during the week was 248 (corresponding to a rate of 43 per thousand total births), including 32 in London.

Colonel P. S. Tomlinson, late R.A.M.C., has been granted the acting rank of major-general and appointed director of medical services in a command overseas.

In England Now

A Running Commentary by Peripatetic Correspondents

THE first daylight air-raid warning since September caught me driving home. I did not hear it, but saw people running in all directions, not at all dismayed, no rushing across the road to the danger of the motorist, but just trotting quietly home. Then the traffic began to go funny; buses slowed down and tacked themselves one behind the other at the side of the road, like the white cells in Cohnheim's experiment on inflammation. I went on, wondering whether I should be stopped or whether I was allowed 5 minutes to get home as pedestrians are. Up the hill the traffic got scarcer, but people were walking or standing about as usual, and I suspected the warning had not reached them. I got home to find the missis chatting in the street with one neighbour, while another was asking her into her house thinking she should not be out. She had seen some firing in the sky before the warning went, and was telling someone all about it. Very wrong but very natural. I put the car away and went indoors just as the all-clear went. I was glad to hear it, for I wanted my dinner. A few minutes later I heard a noise in the street and looking out saw some boys with sheaves of papers under their arms. They were calling to one another about leaflets. I rushed down to try and get one, but recognised from the boys' behaviour that I had been had. I called the youngest and he came up smiling, saying "I have only been pulling your leg, Sir!"

Next day when the siren went I was in the radiographic department giving a demonstration on some films. As we were well underground we went on with it but then were faced with the difficulty of lunch. I got a cup of tea and some biscuits from the O.P. canteen and had just settled myself with pen and paper when the all-clear went. My colleagues rather envied my having had plenty to occupy my time. If there are to be many of these periods of inactivity we shall have to organise something to keep the expectant workers amused. I suggest the old game of spillikins. The girl in the Lyons shop where I had my t-lunch told me they had had a concert in their shelter. Many will improvise such, but some preliminary planning would be advisable.

In the evening I was just getting out of the bus when the warning went again. I had to go to an outlying hospital in my car and wondered if I might do so. I asked an air-raid warden who informed me I could at my own risk. Opening the garage I heard some firing that sounded near but it soon passed so off I went, picking up some petrol without difficulty by explaining my errand to the owner of the garage and showing him one of the numerous cards that I have had foisted on me by various superintendents. The emptiness of the streets aided motoring, but at the first cross-roads I was surprised at finding a dozen or more vehicles held up at the traffic lights. The reason turned out to be a number of improvised ambulances driven furiously. I thought they must have casualties, but actually they were empty—it was the exuberance of their drivers with a job in view after their long wait. Their speed was understandable but not very wise. The greater the hurry the more slowly should the ambulance driver go. He should say to himself "this case is so important I dare not risk even five seconds delay from a meeting with another car." There were still a fair number of pedestrians about who would have been casualties if a plane had suddenly swooped. I do not suppose that all the English race will ever obey the rules; nor do I think this is a bad sign—a few casualties to whom it may be said "you've no-one but yourself to blame" is better than a nation cowering under cover. At the hospital the children were in high jinks on mattresses at cover-points in passages, delighted that bed-time was deferred. The theatre-sister thanked me for giving her something to do instead of hanging about; as though I had produced the emergency on purpose for her. We were about to start when there was cheering from a bunch of nurses along the passage. I rushed along thinking to see a plane brought down, but it was the all-clear sounding. The tone of their cheer showed their mental relief and yet I cannot see that there is any strain on the Londoner. To write like this sounds cruel to those who have been nearer it. At a hospital to which I went on Saturday one nurse had heard she had lost a sister killed and a clerk had lost a brother. We may write and behave with coolness in these raids, but we must never laugh at them.

* * *

If the Londoner is but little disturbed, the countryman is still less. On Sunday we heard aeroplanes so high up we could not see them and wondered if they were invaders. Then the signal went and I rushed down to the pub to get the dinner beer, fearing it would close. The bar was full. There were the usual habitués of Sunday at one o'clock, supplemented by a sprinkling of soldiers and a large body of bare-kneed cyclists of both sexes. The pub did not close, but it emptied, for everyone ran into the road to strain his eyes at the skies and try to see something more than bursts of smoke. There were some that interpreted every puff from the archies' shells as a plane brought down. I went back to the cottage with my beer, and was almost thought unpatriotic for insisting on putting it in a cool place before joining the garden group to watch the explosions.

* * *

The sea and the soil are two great healers of the mind. For the sedentary brain-worker who is mentally fagged the best kind of cerebral holiday is one with a fair modicum of bodily exercise. In our youth it took the shape of two rounds of golf a day, the standard of play deteriorating steadily as the weeks went by until we swore we would never handle a club again. In middle age we seek less strenuous exercise, and what could be better for mind and body than fishing from a sailing-boat, or from a rowing-boat rowed by a boatman? It was thus that I spent the greater part of my vacation, cut this year from four weeks to two, at a well-known and secluded fishing village in North Devon. It was a form of escapism well justified by results. The war seemed far removed as the days went lazily by in idle gossip with the friendly fisher folk, garrulous and innocently boastful, superstitious and religious, like fishermen the world over; yet ready at a moment's notice to man the life-boat. The warm brogue of the natives seemed in some danger of being eclipsed by the cockney voices of 150 evacuated children. It was a delight to watch these happy youngsters from London savouring the joys which the country boy takes for granted. Only a few of the older ones wished to go back to Peckham—they were missing the movies. Incidentally, the Devonian brogue, particularly as spoken by the older generation, reminded me strongly of the American—or if there is a difference the Canadian—accent, and I wondered if the Pilgrim Fathers were all west-countrymen. We returned home to find the garden, even after so short an absence, sorely needing attention, and a judicious mixture of weeding and digging completed my mental rest cure. There are few things so soothing to a jaded mind as the smell of freshly turned soil.

* * *

Hampstead Heath on this first war-time first Monday of August—one daren't call it August Bank Holiday—may not have been what it used to be, but it was a fairly good imitation. The crowd of holidaymakers seemed as dense and as happy and was perspiring as freely as ever, and the adult male was by no means an *avis rara*. What one missed most was the noise. Gone was the blare of music (sic) as the horses and motor-cars went round and round, and other musical noises were muted to conform to the new regulations; even the barkers were doing their barking in dumb-show. All lights and flares had to be shaded, and I imagine the evening lost most of its glamour from the "lights out" order at 8 P.M. One side-show is still as slick as ever—the clearing of the snow-storm of litter from the Heath next day.

* * *

This war is making us a suspicious race. After the sign-posts were removed I went one day for a gossip with a neighbour. At the cross-roads a car stopped and the driver asked me the way to Town A. He seemed the nice sort of boy that works at motor garages, and was driving three young soldiers. I leaned on the door of his car and settled down for the sort of chat that we still have in the country on such a subject at four cross-roads,

and asked him whence he had come. It was Town B and I told him he was miles out of his way, should have gone straight on at Town C instead of turning left, and must turn right and go straight on to town D or take a right incline through twisty lanes to town E. "In either case," I said, "you will arrive at the great road between London and the coast in which town A is. Turn right and you will get there." And then I realised the enormity of my crime. I had exposed the whole outlay of towns in the district to a fifth-columnist. What was this pimply youth doing driving soldiers—or were they pseudo-soldiers—on a Saturday afternoon? As he went round the corner, my suspicions were confirmed. He was driving with a trade-plate. I noted the number, but having no pencil with me had to go on repeating it to myself as I walked along the road, until another car slowed down and the driver asked me if it was the road to Town F. It was an ancient Daimler and contained a Victorian lady. The chauffeur still had a jaunty air which showed he had been her coachman before she changed her carriage for this car. There's no deceit here, thought I; and then a second thought, "that's just how two spies would disguise themselves"; and my answer hissed itself out in a hoarse whisper, "yes! Straight on!" At the cross-roads, as I returned, stood a solitary lady, middle-aged and of attractive appearance, who asked me whether I knew of a public telephone near-by. "None," said I, "excepting that one"—pointing to the R.A.C. blue box. She had come by bus, she said, expecting to be met in a car by a friend and taken on to town G. My normal behaviour would have been to ask her to come in and use ours, which was within a stone's throw though the house was hidden by trees. Instead I asked her whether she had her identity card as a preliminary. "Yes!" she said, but thanked me smiling, she would not trouble me, but would wait a little longer for her friend. I then knew that she had made a mental map of the means of communication from our cross-roads. Then an army lorry stopped and the driver asked me if it was the way to town H. "How do I know you are not fifth-column men?" I asked, for by now I was alarmed at my treacherous behaviour and felt I must go and get my gun. But the smiles of the driver and his mate disarmed me and I added "yes!" I went in feeling that the only beings with whom I could safely commune in the country were the birds in the high hall garden; and I pondered over the evenness with which our Saxon ancestors had scattered their steads, their tuns and their hams over the land that they had conquered.

* * *

The latest diversion in our suburb is the junk shop run in aid of the Red Cross. It was the minister of the Congregational church that did it. He borrowed a large ground-floor shop temporarily unused by a firm of motor salesmen. He has staffed it with the ladies and gentlemen of his congregation, and there we go and give him anything we do not want and purchase those things which our neighbours no longer need. Our own acquisitions have been a copper kettle and two sandwich tins and two books have been smuggled in with them. In the first week they took £100, in the second £130 and in addition materially helped the salvage scheme by sorting out various metals and putting aside considerable quantities of paper. The third week shows no signs of abatement, indeed, the articles exposed for sale seem to go up in value and to include a number of radio sets and gramophones. It will be interesting to note whether these bring in as much as the smaller articles of the first week; if they do not we can return our copper kettle and sandwich tins to see if anyone else will take them.

* * *

The savage winter has played havoc in my garden. The macrocarpa is nearly all dead, so is the pinus insignis of lovely green, and even laurels and laurestinus are badly hit. On the real natives, however, the willows and oaks, it seems to have acted as a stimulus. Will war be like that, killing off southern exotics and leaving natives with increased fertility? The thousand years or so they took becoming established now stand them in good stead, while recent rivals perish. Commas and white admiral butterflies are common this year. Is that another result of the intense cold? Probably, and chaffinches and song thrushes are definitely scarcer. Half a dozen winters of that sort would change the picture of our island fauna and flora.

If another ice age came, would it come suddenly or very gradually, a lowering on the average, say, of a tenth of a degree a year, scarcely perceptible from one generation to another, allowing us and our life-brothers of fur and feather and leaf time to select who is most capable of staying on and sticking it out, who is to be packed off south in migration, who is to be buried under the glacier tombs? I wonder.

Parliament

Sir Francis Fremantle presided over a meeting at the House of Commons on Aug. 15 when Sir Richard Cruise, F.R.C.S., and Mr. Kenneth Walker, F.R.C.S., spoke on the prevention of war injuries by protective devices. Sir Richard Cruise described the visor he had submitted to the War Office in 1917 and which had been approved for adoption at the close of the last war. An improved type much superior in mechanism and efficiency had now been perfected and supplies had been ordered by the War Office for an extended trial. A large first order for these visors has also been placed by the Admiralty. The urgent desirability of this protection for the eyes has been endorsed by the Ophthalmological Society of the United Kingdom. Sir Richard Cruise claimed that this device would prevent fully 50% of the gunshot wounds and a great majority of the eye injuries due to small fragments of high-explosive shells and bombs. Mr. Kenneth Walker dealt specially with the prevention of chest wounds, which caused probably 60% of war casualties. He said there was no desire to increase the heavy load already borne by the soldier by the addition of weighty armour, but materials were already available which could be moulded for attachment to the box respirator to form a protective shield for the chest cavity. The great obstacle to be overcome was the traditional reluctance of the soldier to adopt safety devices, but the steel helmet had proved so effective in preventing head injuries that there should be less hesitation in accepting protection for the more vulnerable area of the body. Mr. Walker mentioned that a joint committee of the Royal Society of Medicine and the Service departments was now considering suggestions which might mean a great saving of man power by reducing the wastage caused by war wounds. After a discussion the meeting appointed Sir Francis Fremantle, Sir Ian Fraser, Brigadier-General Sir Ernest Makins and Captain G. S. Elliston as a deputation to bring the urgency of the matter to the personal notice of the Secretary of State for War.

FROM THE PRESS GALLERY

The Purchase Tax

IF the final debates on the Finance Bill in the Commons did not produce much in the way of concession on the part of the Chancellor of the Exchequer they certainly cleared up a number of points which are of importance from the medical point of view. Mr. WOOLLEY did useful service by raising the question of the meaning of "exceptionally costly" as governing the exemption of medical and surgical drugs from the purchase tax. He suggested that these words must be interpreted in relation to the capacity of people to pay. It was satisfactory to know that insulin and the active principles of liver would be exempted, but what about the poor patient suffering from a secondary anæmia? In such cases the treatment was long and the burden of cost could not be measured by the actual cost of the drug. Moreover, anæsthetics, though essential, were not included in the free list. How could people who had small means, and were faced with increased domestic expenditure, be expected to pay this extra tax when they were ill? This point received general support on both sides of the House. Mr. WAKEFIELD complained that nobody knew anything about the list which the Financial Secretary to the Treasury had said was being drawn up defining those drugs or surgical instruments which were to be regarded as costly. They had been told that the list was compiled by eminent medical men who were unanimous about it. Their alleged unanimity made Mr. Wakefield gravely

suspicious. Another aspect of the problem was presented by Mr. BARNES who asked that the patent and branded medicines should receive consideration. This class of article, he said, was already subject to taxation ranging from 25 to 35%. If the purchase tax was imposed on the cheaper medicines it would lift many of them into the level of the higher priced medicines, thereby attracting the heavier stamp duty. He urged that either the stamp duty should be repealed or the purchase tax should not be imposed. Sir IAN FRASER said that whether they individually cared for proprietary medicines or not there was a principle of equity involved which the House ought not to allow to pass without comment. These patent medicines were not luxuries bought by the few; they were household commodities bought by the many.

* * *

Sir KINGSLEY WOOD agreed that there was a considerable anomaly in the matter of the Medicine Stamp Duty. He promised to try to get the parties together and reach some reasonable solution before the next Finance Bill. He could not at this stage make an exception in regard to a particular class of medicines or drugs. He assured the House that they would have a full opportunity of seeing the list of medical and surgical appliances which the Government had in mind because it would come forward for approval on the section of the bill which allowed the Treasury to make the necessary definitions. It would be possible to amend the list from time to time. He was asking permission to impose a duty of 15⅓% on drugs and medicines manufactured or prepared as specified in the third schedule. He was fortified by some remarks made by the Chief Medical Officer of the Ministry of Health in his report for 1935 in which he almost invited taxation of medicines, even of the sort prescribed by doctors. "A considerable proportion of the total outlay of drugs prescribed by the medical profession," said the report, "averaging 3s. per head, could be limited without detriment, indeed with advantage to the proper treatment of the people." A little later there was the added comment: "In some areas insured persons have acquired a habit of medicine drinking which the practitioners in those areas are reluctant to control." The proper thing to do was to exact a contribution from the general class of medicines while protecting medicines, drugs and appliances which were essential.

* * *

Dr. MORGAN characterised Sir Kingsley Wood's speech as "ribald, ironical and cynical." This was an unworthy tax imposed on the sick and suffering when other things which ought to be taxed were left untouched. To make doctors think twice before ordering certain medicines was a scandal to the financial system of the country. The Chancellor had produced a statement by a medical bureaucrat—a man completely isolated from patients. There were plenty of people in this country who needed more medicine than they could afford to buy.—Captain ELLISTON made a strong plea that medicines dispensed by or on behalf of registered medical or dental practitioners should be exempted from tax. This, he said, was recommended by the select committee on the Medicine Stamp Duties which reported in 1937.—MRS. TATE hoped that the Chancellor would not consider Captain Elliston's suggestion. The medical profession was the closest trade union in the world, and she hoped that no further unjustifiable advantage would be given to it.

* * *

Mr. STOREY made another gallant attempt on the report stage to secure exemption from the purchase tax for the voluntary hospitals. He quoted the Chancellor's statement in announcing the decision to exempt newspapers that "it was not in the public interest that there should be a diminution in the services of newspapers to the public." If that was a sound argument for the exemption of newspapers surely it was equally so in the case of the hospitals.—Captain ELLISTON, Dr. EDITH SUMMERSKILL and other members joined in the appeal, but the Chancellor refused to alter his decision of the previous week. If any concession was to be given, he said, it must apply to hospitals generally, and not merely to voluntary hospitals. He did not believe that the tax would place an undue burden on the voluntary hospitals or play any part in their ultimate fate.

At a later stage Sir KINGSLEY WOOD moved an amendment to carry out his undertaking to exempt from tax a number of surgical and medical appliances beyond those originally contemplated—i.e., artificial limbs and spinal jackets—and to include also surgical boots, crutches, trusses, aids to the deaf and similar appliances which might have been held to be liable to tax. The exemption would include all such things made for surgical use, such as operating tables, bandages and so forth.

Tuberculin

During the debate in the House of Lords on the second reading of the Agriculture (Miscellaneous War Provisions) (No. 2) Bill on Aug. 13 Lord Moyne referred to the tuberculin now being issued. The trouble, he said, had been by no means limited to this country or to the supply of tuberculin recently produced at Weybridge. The new tuberculin was undoubtedly more potent in producing a reaction than that which used to come from Camden Town or from the Department of Agriculture in Cambridge. This trouble existed in a similar form even before Weybridge took over. The trouble was due to the fact that in tuberculosis, as in a great many other diseases due to micro-organisms, there were various strains. The bovine strain was not distinguished by the test from the avian strain, which was quite harmless to cattle. Many cattle had avian tuberculosis which they had caught from poultry, and there were found post mortem tiny lesions of no importance from the point of view of the health of the cattle. Hitherto the test had not distinguished between the objectionable bovine infection and the harmless avian infection, but in future it was proposed to have at the expense of the scheme a simultaneous intradermal injection of bovine and avian reagents and compare the effects. If there was a much bigger reaction from the bovine, it would be accepted that the animal was a reactor to bovine tuberculosis. If the avian outstripped the bovine in the size of the intradermal reaction, then the animal would be passed as safe.

Summer Recess

The parliamentary week has been shortened since the war began, but members have been subject to a good deal of extra strain and have earned a holiday, even if it is small compared with the customary summer recess. It has been arranged that Parliament will rise on Thursday, Aug. 22, and reassemble on Thursday, Sept. 5, but the authorities of both Houses will have power to summon members earlier in an emergency. In the autumn it will be necessary to pass legislation prolonging the life of the present Parliament for another twelve months.

QUESTION TIME

War-time Bread

REPLYING to a question whether the Minister was aware that there are many medical men in this House sceptical about the addition of vitamin B_1 to flour, Mr. R. BOOTHBY said he was also aware that there are many medical men and scientists in this House and outside it who are warmly in favour of it. Asked whether the process was all done under the patent of Roche Ltd., he said: No, the process has been undertaken by various firms in different countries, but I understand that Roche Ltd. are the only firm at present producing in this country.

Sir FRANCIS FREMANTLE: Is the Parliamentary Secretary aware that there is not one medical man who does not consider it infinitely better to have wholemeal bread?—Mr. BOOTHBY: The view of the Government is that a large number of people in this country do not care to eat brown bread, and this is really the primary reason for the decision which has been come to.

Milk

Mr. DAVID ADAMS asked what steps were being taken to render fit for human consumption undesignated milk now being supplied for food by the Milk Marketing Board; and whether, pending such remedial action, he would prohibit the sale of this product in the interests of public health.—Mr. BOOTHBY replied: During the past 6 years the proportion of undesignated milk has fallen from 95% to 52% of the total quantity of milk produced. Every effort is being made by the milk marketing boards with the financial assistance of the

Government to increase the production of designated milk. In addition, a proportion of undesignated milk is pasteurised before sale for liquid consumption. The proportion varies in different parts of the country. It would not be practicable to prohibit the sale of undesignated milk, since the supply of designated milk is not yet sufficient to meet the requirements of the liquid consumer.

Mr. ROBERT MORGAN asked for information about the circularisation of the staff of Lewis's with the object of obtaining guidance upon the distribution of milk.—Mr. BOOTHBY replied: The inquiry was made at the request of the committee recently appointed to advise the Minister on milk distribution costs. I understand that the committee desired to obtain some indication of the manner in which the consumption of milk would be likely to be affected by changes in price and methods of distribution. For this purpose informal arrangements were made for the issue of a simple questionnaire to the staffs of:—

The Ford Motor Company, Ltd.,
Lewis's (Manchester, Liverpool, &c.),
The Gramophone Company Ltd., Hayes, Middlesex,
The Raleigh Cycle Co. Ltd., Nottingham,
and certain other commercial and industrial firms.

Rear-Admiral BEAMISH asked how it was proposed to operate the extended distribution of the national milk powder.—Mr. BOOTHBY replied: No extended distribution of the powder is contemplated. Its issue is being restricted to the case of infants of under 12 months of age for whom a medical certificate is received that milk powder, instead of liquid milk, should be provided under the National Milk Scheme. The distribution of the powder will be in the hands of the Ministry's milk officer, who will be assisted, wherever practicable, by local welfare centres and district nurses.

Communal Feeding

Replying to Mr. ADAMS, Mr. BOOTHBY said that extensive facilities for communal feeding were already provided by commercial enterprise and by voluntary agencies. These were being continually augmented to meet current requirements, particularly in industrial centres. Steps had been taken to encourage an extension of existing school-feeding facilities, and the Ministry of Food had undertaken to investigate any cases in which, as a result of inquiries made by the welfare officers of the Ministry of Labour, it appeared that existing or prospective provision for the feeding of factory workers is inadequate. While the need for further provision was being kept under review, it seemed unlikely that any measure of compulsion in regard to communal feeding would be necessary.

Surgical Mobile Units

Sir F. FREMANTLE asked the Minister of Health how many surgical mobile units were now equipped and ready for action in the Emergency Medical Service; what was their distribution and personnel; and under whose orders they would move.—Mr. M. MACDONALD replied: The number of surgical mobile units equipped and ready for action is 456, including 7 special units. Of this total 115 are in the London sectors and the remainder distributed over the principal towns in each region. A team consists of a surgeon, an anæsthetist, a sister and a male assistant who may be either an orderly or a medical student. The teams will move under the orders of the hospital officer or the group officer in the respective areas.

Mr. MACDONALD added that at the time of the evacuation from Dunkirk a great many of these mobile surgical teams did exceedingly valuable work.

Pay of R.A.M.C. Officers

Sir ERNEST GRAHAM-LITTLE asked the Secretary of State for War whether he was aware of the anomaly of pay which existed between retired officers of the same rank in the Royal Army Medical Corps, who were employed before the outbreak of war, under the Royal Warrant of Pay, 1931, Article 520 A (or 1940, Article 498 A), and those taken into employment after mobilisation, September, 1939; and as the former, who elected to serve in peace, were being held to their engagements without any pay revision or allowance for the increase in work and responsibilities out of all proportion to their original contracts, whether he would allow these officers to accept service under Article 518 of 1931 (Article 496 of 1940).—Sir EDWARD GRIGG, under-secretary for war, replied: Retired R.A.M.C. officers employed during peace on a contract under which they receive a rate of pay in addition to their retired pay are one of several categories of re-employed retired officers employed during peace. It has been the practice since the war began to hold such officers to their peace conditions where the duties have remained unchanged. Where such officers have transferred to other duties involving a liability to move and serve at any station according to military requirements, or where the peace-time duties have changed in character involving automatic liability to serve anywhere according to military requirements, the officers have been transferred to full pay and allowances, their retired pay ceasing. In general, the peace-time R.A.M.C. retired officers have continued to serve in their peace-time stations, but a number who have changed their stations and accepted general liability for service have been restored in full pay, and this would be applied in any future cases where general liability for service, with forfeiture of any peace-time contract rights, is accepted.

Byssinosis

Dr. H. B. MORGAN asked the Home Secretary the position with regard to byssinosis, or card-room workers' bronchitis; whether a scheme for workmen's compensation for those disabled by this disease had been agreed, or negotiations completed; whether the necessary legislation was being prepared; whether this legislation, or Parliamentary approval to the scheme, could be expedited; and when it was likely to be laid before the House.—Sir JOHN ANDERSON replied: Proposals based on the departmental committee's recommendations have been substantially accepted by the employers' and workers' associations concerned, and a bill to enable effect to be given to them is being prepared. I hope that it may be possible to introduce the bill soon after Parliament reassembles.

Shell Shock

Mr. RHYS DAVIES asked the Minister of Pensions the number of shell-shock cases still being treated from the war of 1914–18; what was the annual cost of such treatment; and whether any new remedies had recently been tried to cure shell shock.—Sir W. WOMERSLEY replied: I am advised that no cases which could, as such, properly be described as "shell shock" are now, or have indeed for many years been, under treatment by the Ministry. Shock and other war neuroses are fully dealt with in the report of a conference of neurological specialists convened by me last year.

Vagrants

Mr. ASSHETON, parliamentary secretary to the Ministry of Labour, informed Captain STRICKLAND that the total number of vagrants accommodated in casual wards in England and Wales on June 28, 1940, the latest date for which figures were available, was 3739 (including a small number of women and children) which compares with 5098 on May 24, 1940, and 7255 on June 30, 1939. There was no information to show how many of these were able-bodied men.

Spectacles Exempt from Purchase Tax

Captain H. F. C. CROOKSHANK, Financial Secretary to the Treasury, informed Mr. Rhys Davies that it was not proposed that the purchase tax should apply to spectacles or to lenses used in spectacles. Spectacle frames would not be taxed unless made from luxury materials such as tortoiseshell and gold.

A.B. BRAND DELAY INSULIN, 40 units per c.cm., is manufactured jointly by British Drug Houses and Allen and Hanburys. It should not be confused with A.B. Protamine Insulin with Zinc Suspension. It is available in boxes of 5 × 5 c.cm. vials, with a vial of sodium phosphate solution. A.B. Brand Delay Insulin will shortly be put on the market at double strength.

CORRIGENDUM.—In the paper by Dr. Kark and Dr. Souter in our issue of June 29, a sentence under "*Failure of response to therapy*" on p. 1152 should read: ". . . a second group of patients with less severe and more chronic hepatic disease seem able to produce prothrombin constantly but in quantities insufficient to maintain a normal level in the blood."

Letters to the Editor

WHOLE-TIME FACTORY DOCTORS

SIR,—A recent order by the Minister of Labour makes compulsory the employment of whole-time medical officers in certain large factories in this country. This expansion of industrial medicine—even if it is only of a temporary nature—will be welcomed by all who recognise the importance to the nation of the fullest medical care of the industrial worker. It will be readily appreciated that this young branch of medicine is highly specialised, and it follows that if the maximum benefit is to be derived from the Minister's order considerable care should be taken both in the selection and training of candidates.

For these appointments the services are required of well-qualified men and women, with good experience and wide knowledge and sympathies, and following their selection it is important that they should receive some training in their new work. Not only will it be necessary for them to possess some knowledge of the prevention and treatment of occupational diseases; they will have to learn something of general factory hygiene and of the numerous factors which influence the well-being and output of the industrial worker. A great deal of research has been carried out in this field in the last twenty-five years, and it is important that medical men entering industry should know how to tap this fund of knowledge. In addition, they must know something of the structure of industry and of factory organisation if they are to avoid elementary mistakes early in their industrial career—mistakes which may prejudice their chances of successful coöperation with management at a later stage.

I venture to make two suggestions:—

(1) That assistance should be offered to employers in making appointments of industrial medical officers, and that all such appointments should be finally approved by the Central Medical War Committee.

(2) That a short course of about two weeks be made available for those appointed. There is little doubt that the coöperation of the factory medical department of the Home Office and the London School of Hygiene would be forthcoming for this work.

These matters, I submit, require urgent attention if a great waste of opportunity and of effort is to be avoided.

Finally, I would like to offer the whole-hearted coöperation of this association in the practical training of those who are selected to undertake this work in industry.

RONALD E. LANE,
Chairman, Association of Industrial Medical Officers.

NEGATOL

SIR,—In a letter in THE LANCET of Dec. 30, 1939 (p. 1386), I set out some preliminary results in the treatment of various forms of vaginal discharge with Negatol, and I intimated my intention of following up the cases with a view to publishing a more detailed acount of the end results. The follow-up has been rendered difficult by existing circumstances but here is a résumé of the final results.

Group (*a*): 17 cases of which 11 were seemingly cured. One had had a relapse which is, however, not uncommon after any of the known treatments for trichomonas vaginitis. No further cases of this type of infection have been treated with negatol for another method has in my experience a much higher cure-rate.

Group (*b*): 47 cases of non-specific cervicitis with erosion, of which 45 were symptom-free with healed erosions. Of these cases 4 have developed discharge with recurrence of erosion, but after three weeks treatment apparent cure has again been obtained. A few cases are untraced, but since I had previously asked all these patients to let me know if symptoms recurred it seems reasonable to presume that they are free from symptoms.

Group (*c*): 25 cases of residual cervicitis with erosion following a proved gonococcal infection, with apparent cure in 20 cases. No case has relapsed in this group as far as can be ascertained.

Over 100 new cases have begun treatment since the previous results were published. These included a few cases of monilia infection in addition to groups (*b*) and (*c*). The treatment has also been extended to cases of postnatal cervical erosion with satisfactory results. One other case deserves mention.

A patient was admitted at the 24th week of gestation with persistent slight hæmorrhage per vaginam. She was regarded as a threatened abortion until inspection revealed a large vascular erosion of the cervix which was oozing continuously. The entire area was swabbed with 100% negatol on three occasions with complete cessation of bleeding. The pregnancy was in no way disturbed.

The new cases have all been subjected to the same detailed clinical and bacteriological control but the treatment has been slightly modified in individual cases by omission of the vaginal pack with 5% negatol. The results so far appear to bear out the efficiency of the treatment.

I would appreciate comments from anyone who has used this substance in the treatment of vaginal discharge.

Middlesex Hospital, W.1. O. LLOYD.

BRITISH CHILDREN IN AMERICA

SIR,—In connexion with the overseas evacuation of children from Britain which has been discussed so much in this country as well as in Britain, it is possible that a personal word might be of some interest. A definite effort is being made on this side to match as many features as possible of the home here with the home from which a child comes. I believe this work is in capable hands. I have had my own application for a boy between 5 and 7 from a professional family in the hands of the English-speaking Union for some time and my own children are anxiously ready to welcome another. Although a decision such as must be made by parents in Britain must be most difficult it may be reassuring to them to know that people here are trying to consider in advance all features of family adjustment and the particular factors of age and background which would work out best for all concerned.

I believe that those British parents who send their children here can feel confident that everything will be done for them which could be done at home. Some externals may be different but people are much alike.

EDWIN P. JORDAN.
American Medical Association, North Dearborn Street, Chicago, Ill.

INDUSTRIAL TUBERCULOSIS

SIR,—In a recent annotation (July 20, p. 78) you expressed a fear that the inevitable strain in factory and workshop will lead to breakdown in workers with early or latent phthisis, and you advocated the elimination of these undesirable recruits with the help of miniature radiography on a large scale. I can see no chance of approval for the universality of such a scheme in industrial establishments under present conditions. Here are the reasons which lead me to take this view:

(1) In any sane state of society, where vested interests were subject to national good, the scheme would be an excellent one. It would work out cheaper than ordinary-size radiographs. Recording would be easier, as well as storage and transport. The early sifting of the clear from the potentially infected or doubtful would be a boon in any antituberculous campaign. The stamping out of tuberculosis can only be secured by very early diagnosis. Here is a practical method to secure early diagnosis even on recruitment into industry. Every intelligent worker would agree to the scheme if he saw his economic interests and future safeguarded. You may argue that he should sacrifice his economic interests for the sake of the future health and well-being of the nation. That would be ideal. He would answer by insisting on a similar sacrifice from other interests. He would never agree to a unilateral sacrifice.

(2) It is seldom recognised, even in the medical profession, how frequently in balancing life's chances the worker has to run the risk of sacrificing his health for the sake of employment—of securing or of being retained in work. Sometimes the workman keenly recognises he is risking his future health by sticking to work or sticking to a potentially risky job. The spectre of unemployment haunts the homes of workers, organised

or unorganised ; for on that depends his whole economic status and standard of life (however low). His health he feels compelled to risk in the vain hope that somehow or other he may be lucky enough to escape invalidity or last long enough in minor keys to keep to his work till almost the end.

(3) A preliminary examination on recruitment in industry or whilst in industry, with confirmatory evidence from modern diagnostic methods, would mean not only the loss of his present employment, but his stigmatisation as an invalid or a potential one, his being regarded as unemployable, and his segregation amongst the unfit—and all this in a state of society which has unorganised, uncoördinated, almost chaotic medical services, which depresses his standard of life and nutritional possibilities during his invalidity, which may leave him on the scrap heap without pension, on an inquisitorial public assistance, with his family suffering in consequence and the future rather black.

(4) Who will employ the invalids ? Whose duty will be their care during treatment and recovery and afterwards ? What are their chances of subsequent re-employment ? There is no really decent well-organised tuberculosis scheme on a national scale. A few praiseworthy isolated examples shine out brilliantly. The worker is not only concerned with medical progress, but with some small measure of economic security. True health to him means wages and employment ; but health appears to him to be relative. He may be able to earn some wages if employers do not know of his disability or potential infectivity. The worker feels impelled to take that risk of a possible relative health damage, hoping and praying for luck for himself, and he tries to put off the evil day of a possibly unfavourable diagnosis which may settle his economic doom.

(5) Workmen have had unpleasant experiences over medical examination. A workman may be "sacked" a short time after his examination. His dismissal may have nothing to do with his medical examination ; it may be a perfectly legitimate dismissal on other grounds, but he is frequently given no reason, or a trivial and untrue reason, and in searching round for a cause he thinks of the medical examination and so attaches and fixes the blame.

(6) A workable scheme will have to be voluntary, not compulsory. The workers or their trade-unions will not agree to a voluntary scheme whilst the economic risks remain.

(7) The success of such a scheme among students at University College Hospital has been cited, but there is no comparison between medical students and their outlook and that of the ordinary British worker. The Prophit Trust scheme succeeded with the Post Office workers, but the P.O. workers are in a different category to the ordinary workers. When established, after passing medical tests and educational standards, they have certain privileges—superannuation or grant, pension, sick pay on wages for a varying period dependent on the illness and adequate certification, and are retained in employment if the chances of complete recovery are likely. Even the P.O. workers have their medical difficulties which I will not enter into here. The ordinary worker has no advantages. He is just kicked out without redress. The P.O. worker submits to the initial medical examination with his eye on the sheltered employment.

(8) There is no chance at present of a decent scheme of pensions for the tuberculous, or of retraining and rehabilitation, and so medical progress is held up by lack of social reform. For years I have tried to point this out to the medical profession. Real medicine and a true scientific health outlook have been deliberately enchained and the national health suffers. Can you then blame the worker for his hesitancy and resistance to medical examination ?

(9) These schemes have been tried before by various firms, and the question always arises—who is to employ the men rejected after the firm's medical examination ? And if such examination became widespread, who will ultimately be left with the rejects ? Many firms have tried welfare schemes on this basis. They are never popular, inside or outside their establishment, even with the workers benefiting. The workers have a sense of fellowship which nearly always enables them to see the national picture as against the local spot.

(10) A scheme of this kind would only be accepted if the necessary societary changes were made—viz., a proper medical tuberculosis service with radiographic facilities, &c., with security of economic standard during treatment and retraining, and a decent environment. Have you seen some of the slums in the east end of London and elsewhere ? This is the price of implementation. I wish I could see some hopes.

(11) I do not desire to say one word in favour of the Hitler regime, but part of his callous economic philosophy runs thus. Many men perhaps the majority are, through their educational, cultural and moral limitations, prepared to sacrifice a great deal (freedom to think, read or speak) for the sake of a secured materialistic standard of life on a certain level. That level may have to be heightened now and again, but it can be lowered too (though not below tolerable limits) if a good national excuse (fighting for existence or race or culture) can be put forward in organised propaganda. It is a version of "feed the brute" idea, used nationally in a materialistic way, properly organised. Granted this national standard of life, the gangsters or the privileged ones can get away with the spoils.

Here is a lesson for democracy. Why not let us start on the basis of recognising that every citizen should have a minimum material standard of life with security, working for it if he can, but getting it in any case if necessary on medical certification. But such an idea means organisation—economic and medical. I think changes are coming after the war, but no-one is thinking of the changes for reconstruction later. The old days, the old medical days, are finished. And yet some men—of course of the appropriate masonic lodge and the real school tie, and the superficial knowledge—are worming themselves into the bureaucratic coach, hoping to bolster up their position there and still to have hold of the reins in the end.

The present Minister of Labour is keen on health in factories, but I fear he will never agree to a tuberculosis scheme on the lines proposed under present conditions. And in my view quite rightly too. It is a pity, as tuberculosis could be brought under adequate control. But you should blame those who oppose the necessary counterbalancing economic changes.

House of Commons. H. B. MORGAN.

ESTIMATION OF PROTHROMBIN

SIR,—Like Dr. H. W. Fullerton (*Lancet*, Aug. 17, p. 195) we were struck by the possible advantages of using Russell-viper venom in the estimation of prothrombin. We were fortunate in having the advice of Prof. J. B. Leathes and Dr. C. L. G. Pratt, who made us familiar with the observations of Trevan and Macfarlane,[1] and Mellanby and themselves.[2] It appears probable from these observations that tissue extracts or thromboplastins, such as dried brain, consist of two moieties—thrombokinase and thrombokinase activator. It is certainly true that the thrombokinase of Russell-viper venom can be activated by lecithin, producing a reagent which is more potent than the most active brain extracts so far employed in Quick's test. While speeding up the reaction is not an unmixed blessing, it is probable that a technique which will not give clotting times of the order of 12 sec. on human plasma contains inherent defects. Moreover, not only are the clotting times slow when snake venom alone is used but the range of variation is greatly increased and the results in the hæmorrhagic diatheses may be grossly misleading. Snake venom must therefore be supplemented with lecithin. We hope to publish an account of our own experiments in the near future but in the meantime here are the important technical details :

The optimum dilution of venom appears to be about 1/20,000. Samples of a single batch of venom are very constant, but different batches naturally vary.

Lecithin is added to the dilute venom in the proportion of 5 mg. per c.cm. (0·05 c.cm. of 10% solution of lecithin in alcohol). This is the optimum for the sample of Harrington's

1. Trevan, J. W. and Macfarlane, R. G. Annual Report of the Medical Research Council 1936–37, p. 143.
2. Leathes, J. B. and Mellanby, J. *J. Physiol.* 1939, **96**, 5.
3. Pratt, C. L. G. *Ibid*, 1940, **98**, 20.

ovolecithin we are now using but different samples of lecithin may vary in activating power and it is wise to titrate the optimal proportion.

Prothrombin estimations are carried out at 37–40° C. as in Quick's test: 0·1 c.cm. of the venom-lecithin reagent is added to 0·1 c.cm. of plasma; 0·1 c.cm. of calcium solution is then added *without delay*. Optimum prothrombin times of 8–11 sec. have been found with different batches of venom and human plasma. If one wishes to slow the reaction one employs a higher dilution of venom, but the lecithin is kept at the standard strength of 5 mg. per c.cm.

We have used Rusven (Boots) throughout.

FELICITY C. G. HOBSON,
L. J. WITTS.

ABDOMINAL RIGIDITY

SIR,—Are not the objections which you raise to the acceptance of Dr. Wrork's statements upon abdominal resistance (as measured by a tensionometer) explainable by the fact that he has only been studying the tension of the abdominal muscles and not the presence or absence of rigidity in them. When I was first introduced to abdominal rigidity at Edinburgh University, now nearly 60 years ago, it was explained to me as a condition of "board-like hardness" as distinct from one of mere elastic resistance. An indiarubber sheet, which only possesses elasticity, could never give to the finger tips the sensation of rigidity which is characteristic of peritonitis, however great its tension might be. What is clinically termed rigidity is due to a protective hardening of the muscles of the abdominal wall which makes them abnormally resistant to light pressure as well as to firm pressure.

The tension of the abdominal wall is dependent upon the amount of muscular contraction. The presence or absence of rigidity in the abdominal wall depends upon the presence or absence of hardening in its muscular fibres, due to the type of muscular activity which Sherrington described in 1915 as postural activity. This I believe to be the reason why no experiments with a tensionometer will either confirm or refute the value to the clinician of the phenomenon which he terms abdominal rigidity.

Birmingham. T. STACEY WILSON.

THE FRENCH COLLAPSE

SIR,—There is no doubt a good deal of truth in what Dr. Steele says of the *front populaire*, but the rot cannot be explained merely on the political level. The trouble with France (and she is not the only one) went far deeper than the sphere of politics: it was a decay of the spirit. The building fell down under strain because its walls were already crumbling underneath the whitewash.

Early in the war, one of your Peripatetics recommended a book by Georges Bernanos "Les grands cimetières sous la lune" (translated into English under the title "A Diary of my Times"). Both this, and a more recent one, "Nous autres, Français," published a month or two before the outbreak of war, are worth reading. The latter book has now a poignancy like that of the tender severity of the Old Testament book of Hosea. Already he is aware of the shame of his beloved France—a widespread decay of honour and nobility of the spirit, so that a cynical and corrupt *politique* at home and abroad was natural and inevitable.

"On a mis dans l'honnête tête de ce peuple que le gouvernement des hommes est une entreprise de dissimulation et de mensonge, on a mis dans la tête de ce peuple qu'on gouvernait les hommes par la force et par la ruse. Il est si simple et si gentil qu'il a fini par le croire, qu'il ne se souvient même plus d'avoir été chrétien. Si on le priait de choisir son chef, il répondrait en haussant les épaules: 'Que m'importe? Choisissez le plus menteur.' Aussi longtemps que le peuple français pensera ainsi, j'affirme qu'il sera ingouvernable."

Bernanos is a royalist and a devout Catholic, but he was not very frightened for his country because of the communists. He was far more troubled because of the conservative *bourgeoisie* who prefer to hang on, at whatever cost, to their property and privileges, rather than to seek justice and honour; and he especially condemns those who use the immense prestige of religion to cover and safeguard their privileges.

The sad part of a superficial diagnosis is that it leads to superficial treatment—the use of hot bottles to relieve the pain of acute appendicitis, for example. In this tragedy, diagnosis on the politico-economic level is not good enough. At all events I would counsel those who have an affection for France to read Bernanos and see whether they agree that he is worth listening to for his sensitive insight into what has been and is happening. On the wrapper of my copy of "Nous autres, Français" is a quotation from Charles Péguy. "C'est embêtant," dit Dieu. "Quand il n'y aura plus ces Français, il y a des choses que je fais, il n'y aura plus personne pour les comprendre."

Liverpool. ROBERT COOPE.

A REINFORCED LOAF

SIR,—Professor Drummond replied to my recent letter to THE LANCET at a press conference reported in the *Times* of Aug. 14. The gist of his argument is that since the Medical Research Council has thought fit to recommend the reform it is not for us to doubt the wisdom of it. He also asserts that excessive intake of vitamin B_1 and calcium can do no harm.

With regard to vitamin B_1, as we are concerned with the cumulative effect of this substance extending over many years it is difficult to see on what grounds he has made such a definite assertion, seeing that the required data for such long periods are not available. My complaint is precisely that the authorities have not studied all the aspects of the question before embarking on such a gigantic experiment. I have, however, no personal experience of vitamin B_1, and for this reason my remarks were confined to calcium.

I should like to contradict most emphatically Professor Drummond's assertion that excess of calcium does no harm. Professor Drummond has no medical experience and therefore he cannot have any personal experience of the action of calcium under varied conditions. In the laboratories under my direction many hundreds of blood-calcium examinations have been made and a considerable number of calcium balances (children and pregnant women were not included), and nowhere did we find calcium deficiency. In cases where the intake of calcium was deliberately reduced to low figures the output of this base became very low indeed, so that calcium is conserved in such circumstances. On the other hand we found a good many instances in which calcium intake was excessive. In such conditions some of the surplus calcium has to be got rid of by the kidney. In some instances the work which the kidney has to do to rid the body of the unnecessarily large calcium intake amounts, expressed as litre atmos./litre, to 18·8 against less than 1 when the calcium intake is moderate. Under a slight excess of calcium intake the kidney has to do eighteen times more work than it need do, and the extra strain on the kidney if an excessive intake of calcium is taken over a number of years is enormous. This is a serious consideration in middle-aged people, in many of whom the kidneys are already damaged. Moreover, it has long been known that calcium is found in abnormally large quantities in blood-vessels which are sclerotic, and that it retards the excretions of the kidneys and makes difficult the interchange of fluid between tissues and capillary circulation. That an unnecessary calcium intake does serious damage is established beyond the shadow of a doubt.

Obviously it does not matter whether bread is rich or poor in calcium content. The sole question is whether there is evidence of deficient calcium among the population of the country. It is clear that, before an attempt was made to interfere with bread, an investigation on these lines ought to have been undertaken. Furthermore, if a calcium deficiency were established bread is hardly a suitable vehicle by which to make good this deficiency; for some people eat twenty times more bread than others and therefore would get twenty times more calcium than others.

If the Medical Research Council has made such an investigation let them publish the evidence; if they have not made such an inquiry it is not our bread but the Medical Research Council which is in need of urgent

reform. The Government bread is endowed with all the characteristic features of a patent medicine. We are concerned with a number of unknown, imponderable factors; the calcium requirement of a victim of this dietary experiment is unknown. The amount of calcium in foodstuffs other than bread which he consumes is unknown; the quantity of bread eaten by him remains unknown. All this evidently does not matter. The millennium will be attained when we have swallowed extra doses of calcium of varying magnitude as ordained by the Government experts. The tragedy is that with the same absolute certainty as that two and two make four a large number of the public are bound to suffer serious injury from the doctored bread.

Liverpool. I. HARRIS.

SIR,—My letter in your issue of Aug. 10 was written before I had received, by the courtesy of the Medical Research Council, an official copy of the report of the Accessory Food Factors (Vitamins) Committee, appointed jointly by the Medical Research Council and the Lister Institute of Preventive Medicine, and I am informed in a covering letter that the report "represents their corporate views." Its first and most emphatic recommendation reads as follows:—

"Flour for the bread of the people should contain the germ of the wheat grain, as much as possible of the aleurone layer, and the finer portions of the bran. Instead of flour consisting of about 70% of the wheat grain, as it does at present, the percentage extracted should be at least 80 to 85%."

It is at once obvious that the "reinforced loaf" projected by the Ministry of Food does not fulfil any of these requirements, named as essential by the most authoritative committee which has as yet made a public pronouncement on this subject. The report of the Ministry's Scientific Food Committee, on which the spokesman in the House of Commons for the Ministry declared the Government was acting (Hansard July 18, col. 456), has not been, and I am given to understand will not be, published. The situation is rendered piquant by the fact that the chairman of the "vitamins committee" cited is a leading member of the Ministry's "scientific food committee." One is constrained to assume that the latter's report must be regarded as a political rather than a scientific verdict and is an example of the disadvantageous position of members of Government advisory bodies even when they are individually the most eminent scientists.

This position is castigated in the recently published Penguin book "Science in War" as follows. Speaking of these advisory bodies it says: "They seem to have been much more concerned with agreeing with Government decisions than with challenging them in the name of science. . . . In the long run the 'yes-men' of science are likely to be at least as dangerous as the 'yes-men' of politics."

House of Commons. E. GRAHAM-LITTLE.

SIR,—In your issue of August 10 Sir Ernest Graham-Little discussing the reinforced loaf makes the statement: "There will probably be general agreement that the organic vitamin (B_1) is in every respect superior to the synthetic product." Actually vitamin B_1 is a pure chemical substance with well-defined properties, and it has been repeatedly demonstrated since 1937 that the physiological and therapeutic results produced by its administration are the same, whether the natural or the synthetic substance is used. It is proposed to add synthetic and not naturally occurring vitamin B_1 to bread for the simple reason that it is much cheaper.

Welwyn Garden City, Herts. F. PRESCOTT.

SIR,—Mountains have always had an odd habit of producing mice, but I was puzzled when the mountain of the Ministry of Food brought forth its funny little reinforced mouse of a loaf with its pathetic protective vitamin B_1. Why *synthetic* B_1 alone? Why not follow the Medical Research Council's recent very strongly worded advice? Why continue to rob the people of iron, copper, magnesium, trace elements, vitamin A, the vitamin B complex (except B_1), vitamin E, fat and protein? There is ample proof that about half the nation is deficient in vitamin A, vitamin E, the whole of the vitamin B complex and iron. One has only got to feed either children or adults on a preparation of wheat germ, such as Bemax, to see what the community loses in health by not eating their wheat germ automatically in their bread. Masses of money is poured out over "protective foods": free milk, Oslo breakfasts, vitaminised margarine. Why—when all this could be made largely unnecessary by having stone-ground flour? If the Minister knows, as know he must, that stone-ground flour is best for the nation he should say that B_1 in bread will help slightly, but that he cannot provide really valuable stone-ground bread because of the millers. The nation might listen to him and buy stone-ground flour from people who make it, like Prewetts of Horsham.

Wimpole Street, W.1. FRANKLIN BICKNELL.

AFTER IMAGES

SIR,—If the hand be moved in front of the eyes, half a dozen or more hands will be seen. When however the eye is moved in ordinary circumstances no after-image is seen, unless the object looked at is very bright. It would be very inconvenient if after looking at a dog and then at a man the image of the dog appeared on the man's face. This is obviated by the fact that when the eye moves the ocular muscles shift the photochemical film in the eye and a new film is presented. If a light be looked at in a dark room and then the eyes be directed to a peg two feet to the right the positive after-image of the light will be seen to the right of the peg. The same thing may be seen in daylight. If a yellow ball or lemon be looked at for a second, and then the eyes be directed to a cross on a sheet of white paper to the right of the yellow ball, only a white or faintly blue surface is visible, but on the right of this an elongated yellow area much longer than the ball will be seen.

London. F. EDRIDGE-GREEN.

TREATMENT OF BURNS

SIR,—In view of the present importance of the treatment of burns may I be allowed to stress the value of dressings of "Bonney's blue." In my opinion this mixture of dyes should replace tannic acid. Not only is it a perfect antiseptic lotion for deeper burns but when applied on gauze to burns of the first three degrees it adheres as a firm case quite as occlusive as the tannic-acid coagulum. This case separates gradually as the skin heals and leaves an even better scar than does the tannic method. Bonney's blue, therefore, besides sharing with the tannic-acid technique the valuable attributes of freedom from re-dressings and from pain, has the following further advantages. First, it is easier to apply, since it can be put on burns of all degrees, no re-spraying is necessary and the toilet of the damaged area need not be so thorough, thus eliminating the necessity for more than a whiff of nitrous oxide while the actual dressing is applied. Secondly, the gauze being bandaged on, the subsequent care of the case is easier and all danger of cracking the occlusive dressing by movement is removed. Thirdly, in my experience there is little or no risk of effusion beneath the dressing with the formation of boggy patches and collections of pus. Finally, no special skill is required in carrying out the treatment.

For those who prefer to continue the use of the tannic acid spray may I suggest the application to the cleaned-up burn of the white of a fresh egg with subsequent spraying with a really strong solution of the acid. The resultant coagulum will be found to be much tougher and more elastic and therefore less liable to crack and split. The formation of the coagulum is also much hastened.

I cannot entirely agree with recent suggestions that when fluid or pus collects beneath a tannic-acid dressing it should be left untouched. I have noticed that such collections have a habit of spreading, and, by lifting up more and more of the coagulum, infecting and destroying the growing epithelium over larger and larger areas of the burnt area. I am sure that many otherwise unnecessary skin grafts are occasioned by this procedure.

Battersea General Hospital. A. J. HOBSON.

ANTISCORBUTIC VALUES

SIR,—While all dietitians will be delighted to have the results published in Miss Olliver's paper on the antiscorbutic values of fruits and vegetables (*Lancet*, Aug. 17, p. 190), there is one sentence in it with the purport of which I want to cavil. It is "The weights of material necessary to give the daily dose of ascorbic acid (here taken as 50 mg.) are important, and it is obviously impossible to meet one's daily requirement of vitamin C by eating, for instance, a reasonable quantity of either bananas, pears, stewed apples or plums." If her assumption that 50 mg. is the daily ration and that 7 mg. is the content per 100 g. of banana pulp, then her deductions are impeccable. But many of us are satisfied with the figure of 30 mg. per day, and I have seen two sets of figures, which I hope will be published soon, for bananas sold in the open market in Great Britain, giving a range of 12–15 mg. ascorbic acid per 100 g. It will be seen that if 30 mg. be a reasonable ration, and 12–15 mg. be the actual amount in the banana, a little over two good-sized bananas will give one the day's ration. I am a little puzzled, too, by the figures for apples and lettuce, which are higher than those usually given. Perhaps the explanation is in the difference between varieties used for estimation. Apples, except the Bramley's seedling and some German apples, have a low figure, and to judge from Fixsen and Roscoe so do lettuces. It may turn out that we have to give the varieties whenever we make a statement about the vitamin C content of a fruit or vegetable.

Shaftesbury. V. H. MOTTRAM.

SULPHATHIAZOLE IN GONORRHŒA

SIR,—I read with interest the article in your issue of Aug. 17 by Dr. Lloyd and Dr. Erskine on the results obtained with sulphathiazole (M. & B. 760) in gonorrhœa. I have already treated seventeen cases of uncomplicated gonorrhœa with this preparation with excellent results. Sixteen cases received 4 grammes daily for 5 days and no adjuvant treatment was given. It is interesting to note that the seventeenth case, where the treatment, combined with posterior irrigations, was continued for 7 days, was possibly suffering from drug fastness. After 3 days the discharge disappeared and on the 4th day the urine was clear with no threads. Sulphathiazole is more rapid in its action than sulphapyridine and the toxic symptoms so far encountered have been almost negligible; adjuvant treatment is not necessary. I feel confident that it will replace all other sulphonamide preparations in the treatment of gonorrhœa.

Wimpole Street, W.1. A. H. HARKNESS.

GUILLOTINE AMPUTATIONS

SIR,—Mr. Ogilvie and I are in complete agreement as to the horrors of the skin-retracted stump of guillotine amputations. Our difference lies in the remedies we offer. He demands abolition of the operation; I demand its performance at the correct level and with proper after-treatment. The example he quotes illustrates all the errors I have tried to attack. To treat gas gangrene of the calf by guillotine amputation a hand's breadth above the patella (that is, about six inches above the knee-joint) with no skin traction after the first twenty-four hours is indeed a "savage atrocity." If it is believed that indications exist for dividing the femur so high, then skin flaps should certainly be cut. But why perform any primary amputation six inches above the site of infection? If a guillotine is performed "at the lowest possible level of the limb," in this case through the femoral condyles at the origin of the gastrocnemius, and skin traction is maintained as I know it can be maintained, the final amputation will be at the site of election in the thigh.

Actually I do not defend the guillotine amputation with any great enthusiasm for the treatment of gas gangrene, because in this particular infection the level of amputation is determined not by the viability of skin, but by the infection of muscle. At whatever site the amputation may need to be performed there is nearly always skin below it, which though perhaps crackling is healthy, and from which flaps may be cut. It is the foot and lower leg which is almost blown off, the limb crushed by masonry so that skin, muscle and bone are all destroyed, the infected fracture with thrombosed tibial arteries causing gangrene of skin as well as of muscle, and other cases where skin destruction is a major factor in deciding the level of amputation, in which the cutting of flaps at the time of the primary operation may cause unnecessary shortening of the stump. In these injuries the limb should be guillotined the lowest level of skin viability, and a formal flap amputation performed after several weeks of continued skin traction. The summary of my view is that *if a limb is infected, the first amputation must be at the lowest possible level; if there is healthy skin below that level and the stump is short, flaps may be cut and turned back; if not, a guillotine should be performed at that level in preference to a flap amputation at a higher level.*

Two years ago Mr. Ogilvie wrote one of the finest editorials ever published in *Surgery, Gynecology and Obstetrics*, and said "there is no such thing as absolute truth. Truth is for each of us something personal, something that we have tested and accepted and are prepared to defend." I have tested and accepted and am prepared to defend that which I have taught about guillotine amputations. So has Mr. Ogilvie, whose views may appear to be diametrically opposed. I believe that we are looking at two different facets of the gem of truth.

Liverpool. R. WATSON-JONES.

Medical News

Queen's University of Belfast

At the graduation ceremony in July the following degrees and diplomas were conferred:—

M.D.—Reginald Hall,* J. S. McCann,* J. E. Morison,* M. G. Nelson,* E. M. Moore† (in absentia), E. F. G. James, J. N. Macartney, and James McMurray.

* Gold medallist. † With commendation.

M.B., B.Ch., B.A.O.—W. M. Darling,* D. A. D. Montgomery,* A. R. Crawford,† Hilary Crymble,† A. P. Grant,† Susan Holland,† R. F. L. Logan,† J. F. S. McKee,† R. W. S. Marshall,† S. J. Adams, Samuel Allison, W. S. S. Archer, M. A. Bell, H. M. Bennett, C. M. Boucher, J. R. Bryars, J. D. A. Burns, Ida Campbell, J. A. Chestnutt, R. E. J. Clarke, J. L. Connor, W. J. D. Cooper, K. M. Corbett, W. M. Cunningham, N. A. Daly, W. R. Dickie, J. M. B. Donaldson, J. K. A. Dorman, George Emerson (in absentia), Myer Fisher, H. M. Gault, H. L. B. Girvan, E. H. Gordon, F. D. Graham, S. L. Green, E. C. Greeves (in absentia), A. F. Harbinson, A. T. Harbison, B. V. Hassan, Kathleen Herron, M. S. T. Irwin, C. E. Jamison, Harold Jefferson, W. S. Johnston, A. D. Kelly, Richard Linehan, L. H. V. Longmore, G. I. W. Lusk, A. R. Lyons, W. T. McClatchey, D. H. McCollum, Alexander McConnell, R. W. McDowell, W. T. S. McKean, A. M. J. McKenna, J. E. McKnight, Edmund Maclaine, John Magowan, William Mathews, J. H. D. Millar, T. G. Milliken, D. J. Mitchell, George Mogey, P. G. Murphy, F. J. O'Kane, J. F. Perry, Kevin Quinlivan, George Ross, William Sinclair, Philip Steen, S. I. Summ, A. L. Walby, W. A. Walker, T. McG. Watt, J. J. S. Wilson, J. D. Wilson, R. J. L. Wilson, T. S. Wilson, Trevor Wright, and W. A. Young.

* First-class honours. † Second-class honours.

D.P.H.—Lilian McElroy and L. V. Reilly.

British Postgraduate Medical School

The following arrangements are announced for the week ending Aug. 30.

DAILY.—10 A.M.–4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations. 1.30–2 P.M., post-mortem demonstration.
TUESDAY.—2.30 P.M., Sir Walter Langdon-Brown: ward clinic.
THURSDAY.—2 P.M., Dr. Duncan White: radiological conference.
FRIDAY.—2.30 P.M., Mr. V. B. Green-Armytage: sterility clinic.

Naval Honours

Among the naval men who received honours for services in the withdrawal from Dunkirk were the following.

D.S.O.—Commander E. C. Cordeaux, M.B. Lond., R.N. (retd.) and Surgeon Lieutenant John Jordan, M.B. N.U.I., R.N.

D.S.C.—Surgeon Lieutenant J. W. Shield, M.B. Edin., R.N.V.R.

Prisoners of War

Mr. W. R. Henderson, F.R.C.S., and Dr. Deryck Taverner, of Leeds, who were with a neurosurgical unit attached to the B.E.F. and remained behind at Dunkirk to attend to the wounded, are now known to be prisoners of war.

Study of Infectious Diseases

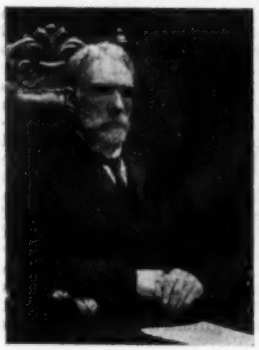
A complete medical unit for the study of the preventive and clinical problems associated with infectious diseases under war conditions is shortly to be sent to this country by Harvard University and the American Red Cross. It will be incorporated in the emergency hospital organisation, but will be staffed by American doctors and nurses and will be directed by Prof. J. E. Gordon of Harvard.

Obituary

WILLIAM RUSSELL

M.D., LL.D. EDIN., F.R.C.P.E., J.P.

Emeritus Professor William Russell died in Edinburgh on Aug. 11 in his 89th year. A Highlander by birth and upbringing he came to Edinburgh to study medicine and remained there all his life. For nearly 30 years he was on the active staff of the Royal Infirmary becoming consulting physician when his term of office expired. The first occupant of the Moncrieff-Arnott chair of clinical medicine in the university he was a teacher whose word and example bore fruit in countless lives. Having married in 1895 Dr. Beatrice Ritchie, a brilliant Edinburgh licentiate who had to take her doctorate elsewhere, he became dean of the women's school and the champion of equal opportunity. Of their five children four, two of each sex, entered the medical profession and the home in Walker Street was a cultured and hospitable rendezvous of doctors, young and old. The fellows of the College of Physicians chose him to represent them on the General Medical Council for 20 years and elected him as their president. He was the first editor of the *Scottish Medical and Surgical Journal* and wrote widely and well on clinical problems, especially some early studies in exact measurement of cardiac function. But his pen was never idle and when he was 80 he sought to reconcile the differences between traditional belief and the scepticism born of recent knowledge. The two concluding chapters of this book set out simply and cogently the causes of present-day unrest and the position of civilisation at the cross-roads.



Morrison

Of the man himself W. J. S. writes: From the nineties onwards Russell was one of the impressive teachers of the Edinburgh medical school. A tall upright figure, a handsome bearded face, a quiet smile and an almost clerical manner and dogmatism made up an outstanding and unforgettable personality. He was a staunch upholder of the physician against the surgeon, and the writer remembers his assertion, in a debate at a medical society, that the condition of an acutely inflamed appendix can be determined by "the skilled palpation to which the physician is trained, and of which the surgeon may be capable!" He was a man of wide reading and culture, with a power of lucid expression; and those who enjoyed his friendship will not forget the charm of his conversation and his personal magnetism in his hours of leisure.

A few other details may serve to illustrate rather than complete a life of singular cohesion. He was born in 1852 at Douglas, in the Isle of Man, where his father, a Wick man, was stationed as an officer of fisheries. His mother, a Macphail, when left a widow, returned to Caithness to bring up her family. In his student career William Russell took most of the available prizes; he won the gold medal for his M.D. thesis, the Cullen prize of the R.C.P. and was Cartwright (New York) prize essayist. After qualifying in 1876 he was house physician and pathologist to the Wolverhampton General Hospital and physician to the Carlisle Dispensary. On his return to Edinburgh he was appointed pathologist and then clinical tutor at the infirmary. His first teaching appointment was a lectureship in pathology at the extramural school; he became visiting physician at Queensberry House, a principal medical officer to the Life Association of Scotland, and examiner in medicine for Edinburgh and St. Andrews. His own university made him an hon. LL.D. and the city placed him on the commission of peace.

Dr. CHARLES SAMPSON, who died on Aug. 13 at the age of 59, was the son of Admiral John G. Sampson, R.N. He was educated at Beaconsfield School and London University, qualifying from Charing Cross Hospital in 1905. After assisting in the X-ray department he became medical electrotherapeutist to the hospital. In 1908 he helped to found the London Clinic of Applied Psychology of which he was hon. director. He saw varied service in the last war: he was senior officer to the Clipstone Military Hospital 1917–18, civil medical officer to the Brigade of Guards 1919–23, and medical officer to the Camberwell division of the B.R.C.S. His pastimes were play-writing and deep sea fishing.

Notes, Comments and Abstracts

MEMORANDUM ON WOUND SHOCK

THE Medical Research Council committee on traumatic shock and blood-transfusion, of which Dr. A. N. Drury, F.R.S., is chairman and Prof. F. R. Fraser and Prof. B. A. McSwiney are secretaries, has now published a memo on the treatment of wound shock (M.R.C. War Memorandum No. 1, H.M. Stationery Office. Pp. 20. 4*d*.). It begins with a discussion of the mechanism of shock. Primary shock, the collapse that may come on soon after an injury and resembles a faint, is disposed of in a few lines, and the rest of the memo deals with secondary or wound shock which develops insidiously some hours after the injury and whose clinical features closely resemble those of hæmorrhage. The memo emphasises the need for the recognition and treatment of shock at the earliest possible moment. If measures to restore the blood-volume are to be effective they must be applied generously and early, before irreversible damage has been done to the blood-vessels and central nervous system. The transfusion of at least 2 pints of blood is required in mild cases and 4 pints in severe ones. Recognition is easy in the advanced stages, but earlier on it may be difficult. Shock should be suspected wherever injury has been extensive, much blood has been lost and exposure has been prolonged, where the skin is pale and cold and the pulse-rate is over 100. Indications that shock is progressing are a rising pulse-rate, a falling pulse-pressure, increasing pallor and the onset of sweating.

In treatment, says the memo, the most important single requirement is restoration of the blood-volume. Certain measures should be applied before the casualty reaches the C.C.S. or receiving hospital. These comprise the control of hæmorrhage, protection from cold, the administration of water and of morphine, blood-transfusion if conditions allow, and the closure of chest wounds. On reaching the C.C.S. or receiving hospital the injured person who is considered unfit for immediate operation because of shock is admitted to a resuscitation ward where treatment for collapse and shock as a rule takes preference over reparative surgery. Here the patient is given rest and quiet and warmth, with morphine for pain and restlessness, the wound is examined to confirm that hæmorrhage has been arrested and a decision is come to as to whether a tourniquet should be removed. For the restoration of blood-volume transfusions are needed either of whole blood, human plasma or human serum, or, when these are not available, isotonic saline. Ringer-Locke solution or gum saline. The memo points out, however, that the intravenous infusion of the latter solutions is of transitory value only and not devoid of risk, and that gum saline, unless very carefully prepared, has been found to be dangerous. For dehydration ample fluids should be given by the mouth or rectum. Oxygen should be given where there is cyanosis, and is especially required when there is any interference with the respiratory intake, as in chest wounds and gas cases. When infection is fully developed on the patient's arrival this will require prompt treatment by débridement, drainage and chemotherapy.

The latter part of the memo consists of appendices giving details of the Army and M.R.C. blood-transfusion outfits, methods of continuous drip blood transfusion and intravenous infusion, the reconstitution and administration of dried serum or plasma, and the administration of oxygen with the B.L.B. apparatus.

CRIME, WEATHER, AND ALCOHOL

THE Mexican Institute of Statistical Investigations began last year to publish a series of reports. The first, an elaborate study of the tendency and rhythm of crime, reveals some interesting facts. Crime as a whole and sections of it, such as offences against the person, homicide, and woundings, showed maxima in the spring. On the other hand, thefts and offences against property were commonest in January and decreased progressively throughout the year, and no annual rhythm was shown by swindles and sexual offences. The spring period being that of highest temperature this factor was investigated separately, and a high correlation was found between the temperature and offences against the person but not between temperature and offences against property. Rainfall varied inversely with woundings and directly with sexual offences. Confirmation was provided of the correlation between crime and the amount spent on alcoholic drinks, especially by women, and in cases of homicide. Offences against property varied directly with the production of *pulque*, a liquor made from aloes, whereas those against the person varied directly with the amount of beer produced. The fines collected by the police varied directly with the production of both *pulque* and beer.

NEW SPANISH JOURNAL

WE have just received from Madrid the first number of a monthly medical journal entitled *Revista Clínica Espanola*. Its appearance is an indication of the spirit of restoration and progress which inspires so many of our colleagues in Spain today. The new journal, the director of which is Prof. C. Jimenez Diaz, is intended not only to disseminate medical knowledge throughout the Iberian Peninsula but to serve as a rallying point for those interested in medical science in Spain, Portugal, and Latin America. The director himself, sometimes in collaboration with his assistants, contributes a study of emphysema, a report on a case of von Gierke's disease, and a note on the ætiological rôle of the rust-fungus in cases of asthma among millers. The original articles include two reports on cases of hyperinsulinism, a study of the early symptoms of cerebral tumour, and observations on the pulmonary volume in cases of artificial pneumothorax. Editorial notes deal with vitamin K and the use of epanutin in epilepsy, and there is a fully documented review of the treatment of pneumonia with sulphapyridine and allied substances. The journal has adopted the system of surveying the current medical literature of the world, and in this number the more important articles in the principal British, American, German, French and Italian journals are epitomised. The original articles in the journal itself all conclude with a summary in German and French. The new review looks like occupying an important place among the world's medical journals. Copies may be had from Antonio Maura 13, Madrid, price 7 pesetas each.

PRESCRIPTION OF POTASSIUM SALTS

THE fact that the Ministry of Supply has deemed it necessary to make an order (which took effect on Aug. 15) to control dealings in potash alkalis clearly indicates the need to husband supplies of medicinal salts of potassium. In future purchases of caustic potash and potassium carbonate may be made only under licence, save in the case of comparatively small purchasers; medicinal salts of potassium will still be available but in view of the shortage of the raw materials (which has been accentuated as a result of the cessation of imports from France) it is necessary to economise in their use. Whenever it is feasible to prescribe sodium or ammonium instead of potassium compounds this should be done—for instance, where ammonium or sodium bromide will answer the same purpose as potassium bromide, or where sodium iodide can be substituted for potassium iodide. Sodium bicarbonate, sodium chlorate, sodium citrate and sodium hypophosphite may be suggested as substitutes for the potassium compounds, and other cases where the use of potassium salts can be avoided will occur to the mind. In all these instances the doses of the sodium compounds are the same as those of the potassium salts. For reasons other than the shortage of potash, Rochelle salt, sodium potassium tartrate and seidlitz powder (effervescent tartrated soda powder) should be prescribed as sparingly as possible. The cause of the scarcity of these is the difficulty of obtaining adequate supplies of the raw material, cream of tartar (potassium acid tartrate), the source of which is the argol deposited from grape juice in the process of wine making.

CHRISTIAN'S SYNDROME

A CASE of Christian's syndrome (infantilism, bony defects, exophthalmos and diabetes insipidus) in a boy aged 12, reported from Cuba[1] seems to disprove the suggestion that this condition is a form of hypervitaminosis A. During an investigation of the content of vitamin A in the blood of all the children then in the Hospital Municipal de Infancia at Havana the patient's blood was found to be poor in this vitamin, in spite of the regular administration of cod-liver oil. For this reason he was put on a course of vitamin A 55,000 units and vitamin D 9250 units daily. A week after the start of this treatment a change for the better could be observed, and thereafter improvement was rapid, including an increase in weight and height, until at the end of two months radiograms showed a regression of the bone lesions which is described as spectacular. There is an excess of cholesterol besides lipoids in the blood in some cases of Christian's syndrome, and it has therefore been customary to prescribe a diet poor in cholesterol. In view of the fact, however, that Esser[2] had reported that one of his patients got worse on a low-cholesterol diet and improved on a high-cholesterol diet, a high-cholesterol diet was given in the Cuban case.

1. Montes, G., Aballi, Jr., Pereiras, R. and Gispert, J. P. *Arch. med. infant*, April–June, 1940, p. 96.
2. Essex, M. *Schweiz. med. Wschr.* 1938, **68**, 1014.

Births, Marriages and Deaths

BIRTHS

DALE.—On Aug. 13, at Grantham, the wife of Mr. R. H. Dale, F.R.C.S.E.—a son.

SPRATT.—On Aug. 18, at Merrow, the wife of Dr. Leslie Spratt—a daughter.

TOMLINS.—On Aug. 15, at the Middlesex Hospital, the wife of Lieutenant David Corbett Tomlins, R.A.M.C.—a son.

MARRIAGES

CRAWFORD—BEECHEY.—On Aug. 17, in London, John Walker Crawford, M.D., of Newlands, Glasgow, to Delia Beechey, of Southfields, London.

CURR—LOBBAN.—On Aug. 10, in Edinburgh, James Fleming Curr, F.R.C.S.E., to Elizabeth Margaret Katherine Lobban, A.R.I.B.A.

FLEMING—STEVENS.—On Aug. 14, at Outwood, Surrey, Hugh Stuart Fleming, M.B. N.Z., of Wellington, New Zealand, to Flora Maud Stevens of Horley, Surrey.

LEE-MICHELL—WRIGHT.—On Aug. 14, at Chelsea, Robert Lee-Michell, M.R.C.S., to Phyllis Wright.

DEATHS

FURBER.—On Aug. 19, at Welbeck Street, W.1, Edward Price Furber, C.B.E., M.R.C.S.

STATTER.—On Aug. 15, at Leamington Spa, Henry Bellamy Statter, M.D. Brux., aged 80.

SAMPSON.—On Aug. 13, Charles Sampson, L.M.S.S.A., of Harley Street, W.1, aged 59.

Appointments

BUTLER, DORA M., M.B. Lond., D.P.H.: M.O., Northampton County Council.

DENNISON, F. R., M.D. Lond., D.P.H.: deputy M.O.H., Leeds.

FINDLAY, ELIZABETH J., M.D. Glasg., D.P.H.: maternity and child-welfare officer, Stoke-on-Trent.

FRANCE, G. G., L.M.S.S.A.: junior assistant M.O., Holloway Sanatorium, Virginia Water. (Corrected).

GLYNN, ADA, B.Sc., Ph.D. Lond., M.R.C.S.: assistant M.O., County Mental Hospital, Lancaster.

SLOTOVER, M. L., F.R.C.S.E.: resident obstetrical officer, Withington Hospital, Manchester.

WHALLEY, G. H., M.B., B.Hy., D.P.H. Durh.: assistant M.O.H. and assistant school M.O., Dewsbury.

WILLIS, EUGENIE L., M.B. Camb., F.R.C.S.: R.S.O., Oldham Royal Infirmary.

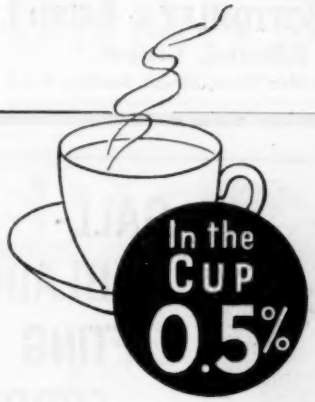
Examining surgeons under the Factories Act, 1937: Dr. D. D. Payne (Harrogate, Yorks); Dr. C. O. Gange (Faversham, Kent).

UNIVERSITY OF LONDON.—The title of professor of physics as applied to medicine with the status and designation of appointed teacher has been conferred on Mr. W. V. Mayneord, D.Sc., in respect of his post at the Royal Cancer Hospital (Free).

Wheat-starch conversion

BY BENGER'S FOOD

Benger's Food is a specially prepared wheaten powder containing adequate quantities of natural pancreatic enzymes of which the proteolytic enzyme known as trypsin and the starch converting amylases are of first importance. The wheaten powder serves two highly important functions (1) it acts as conveyor of these enzymes (2) in preparation of the Food by the admixture of hot milk it is converted into dextrins, dextri-maltoses and maltose.



When the hot milk meets the cold mixture the resulting temperature is correct for the enzyme action. Within two minutes the starch of the wheaten powder has been made soluble so that prepared Benger's Food contains only 0.5% of insoluble starch. As the digestion proceeds the trypsin modifies the milk protein so that when it comes in contact with the gastric juices, it separates into fine flocculi, as compared to the heavy tough curd formed by milk itself. Both actions take place whilst the Food is too hot to drink.

INDICATIONS.

Prepared in this quicker manner (eliminating the standing period and second boiling) Benger's Food provides a soothing and comforting light diet for all minor digestive disorders and ailments.

Prolonging the standing period allows the action of the amylase to proceed further so that dextrins, dextri-maltoses and maltose are formed, while insoluble starch remains as 0.5% of the prepared Food. Tryptic activity continues at the same time so that the milk protein is modified to the point where the curd formed upon contact with the gastric juices is similar to that of human milk.

When breast feeding fails, Benger's Food forms the ideal infant diet. Starch content is negligible. Carbohydrate is present as the ideal mixture in dextrins, dextri-maltoses and maltose. Milk protein is modified to suit the delicate digestive organs of the infant.

When digestive weakness is extreme, such as in cases of peptic or duodenal ulcer and the problem is to give the maximum of nourishment, Benger's Food provides both nourishment and digestive rest.

Sole Manufacturers: BENGER'S FOOD, LTD., HOLMES CHAPEL, CHESHIRE, ENG.

The Benger Laboratories are always at the disposal of the medical profession in any of their dietetic problems.

T.7

For That Extra Margin of Safety—

The ALL K.B.B. BRITISH

SHADOWLESS LAMP

WITHOUT WHICH NO OPERATING THEATRE IS FULLY EQUIPPED

Provides an intense, shadowless, cool and diffused light, allowing the surgeon to see clearly and distinctly throughout the operation. Can be adjusted by a touch. Special Safety Suspensions. Easy to instal. Low maintenance. No glass mirrors to break or require adjustment.

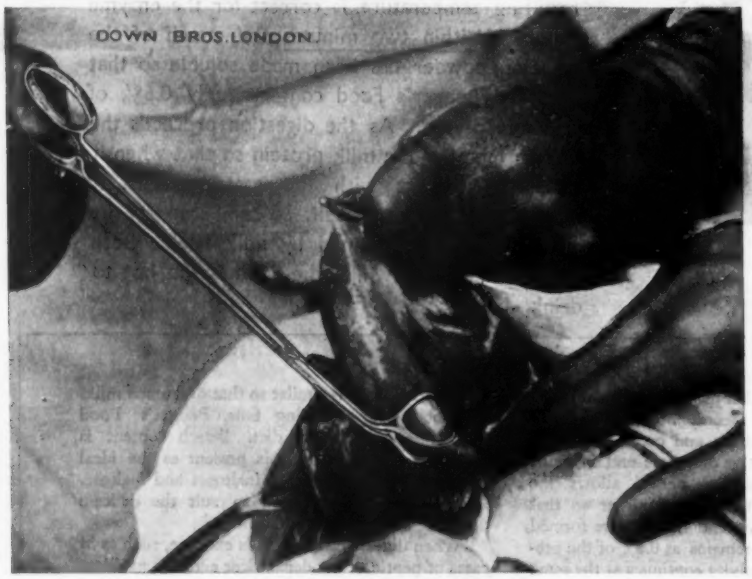
Installed by most leading Hospitals, Infirmaries and Institutions throughout the country, including those of the LONDON COUNTY COUNCIL.

WRITE FOR DESCRIPTIVE ILLUSTRATED LEAFLET

KELVIN, BOTTOMLEY & BAIRD LTD.

Hillington, Glasgow

303 Shell-Mex House, Strand, London, W.C.2



GALL-BLADDER LIFTING FORCEPS

BY

T. B. MOUAT

F.R.C.S.

Vide THE LANCET, *Nov. 12, 1938*

DOWN BROTHERS LIMITED

Surgical Instrument Makers

LONDON: 21 & 23, ST. THOMAS'S STREET, S.E. — 22a, CAVENDISH SQUARE, W.1

TORONTO **CALCUTTA**

Medical opinion is unanimous—in cases of extreme weakness, strength must be restored *without strain*. In the most critical stages of the patient's illness Brand's Essence has consistently revived strength *safely*, within minutes. Brand's Essence forms no irritating solids. Digestion proceeds quickly and easily, no strain is imposed upon the system, and Brand's life-giving protein is available almost immediately for restoring strength. Its use in extreme post-operative weakness and after childbirth will be readily appreciated. Again, in high fever, Brand's Essence is specially useful because it contains no irritant meat fibre or salty matter and *does not cause thirst*.

DOCTORS AGREE

BRAND'S ESSENCE
SUSTAINS STRENGTH SAFELY

BRAND'S Chicken or Beef ESSENCE

BRAND & CO. LTD., SOUTH LAMBETH ROAD, LONDON, S.W.8

EMLMJ238

ERGOAPIOL (SMITH)

AMENORRHEA - DYSMENORRHEA
MENORRHAGIA - MENOPAUSE

Today, as for years, Ergoapiol (Smith) is the accepted medicament in combating those menstrual anomalies which may be traced to constitutional disturbances; atonicity of the reproductive organs; inflammatory conditions of the uterus or its appendages; mental emotion or exposure to the elements.

The physician readily can ascertain whether his prescription for Ergoapiol (Smith) has been correctly filled by dividing the capsule at the seam, thus revealing the initials M.H.S. embossed on the *inner* surface, as shown in photographic enlargement.

Literature on request.

MARTIN H. SMITH CO -- NEW YORK, U.S.A.
THOS. CHRISTY & CO. LTD., 4, OLD SWAN LANE, LONDON, E.C.4
Agents for Great Britain and Ireland

SAFE AND CERTAIN
BIOLOGICAL THERAPY

★ ANTIPEOL OINTMENT

contains sterile vaccine filtrates (antivirus) of all the common strains of **STAPHYLOCOCCI, STREPTOCOCCI** and **B. PYOCYANEUS** in a lanoline-zinc-ichthyol base

STOPS SEPTIC DEVELOPMENT WHILST HEALING

SPECIFIC AGAINST the micro-organisms causing abscesses, boils, eczema, dermatitis, erysipelas, hæmorrhoids, impetigo, ulcers and all inflammatory cutaneous affections. **ANTIPEOL LIQUID** for infections of the ear, septic cavities and suppurating wounds

★ OPHTHALMO-ANTIPEOL

contains, in a semi-fluid base, the sterile vaccine filtrates of **STAPHYLOCOCCI, STREPTOCOCCI, B. PYOCYANEUS, PNEUMOCOCCI FRAENKEL AND GONOCOCCI**

INDICATIONS: Conjunctivitis, blepharitis, keratitis, dacriocystitis, and all inflammatory conditions and lesions of the eye

★ RHINO-ANTIPEOL

a nasal immunising cream, contains Antipeol Liquid as well as the antivirus and autolysins of **PNEUMOCOCCI, PNEUMO-BACILLI, ENTEROCOCCI, M. CATARRHALIS, B. PFEIFFER,** and calmative and decongestive ingredients

INDICATIONS: Coryza, rhinitis, hay fever, catarrh, influenza, colds and other naso-pharyngeal infections

★ ENTEROFAGOS (ORAL)

polyvalent bacteriophages specific against 132 strains of micro-organisms common to infections of the gastro-intestinal tract, kidneys and bladder. **RAPIDLY EFFECTIVE RESULTS** in enteritis, dysentery, colitis, diarrhœas, B. coli infections, typhoid and para-typhoid fevers, and other intestinal and para-intestinal infections. Oral administration. No reactions. No shock

★ DETENSYL

vegeto—polyhormonic hypotensor ensures gentle and regular reduction of arterial tension

INDICATIONS: High blood pressure, arthritis, arteriosclerosis, palpitation, ocular and auditory troubles of hypertension. No contra-indications

CLINICAL SAMPLES AND LITERATURE FROM:

MEDICO-BIOLOGICAL LABORATORIES, LIMITED, Cargreen Road, South Norwood, London, S.E.25

"An After-Fitting Service to meet changing Aural Conditions"

OUR SERVICE TO DOCTORS AND THEIR DEAF PATIENTS!

—NUMBER TWO—

IN prescribing "Ardente" for your deaf patients when an aid becomes necessary, you are safe because they can obtain service in most important towns throughout Great Britain—to meet any change in their aural condition. As an additional safety factor, each "Ardente" is covered by its maker's guarantee.

There are a full range of "Ardente" types—electrical and non-electrical, bone-conduction, granule, valve, and phantom—which are individually suited, after testing by Aurameter, to the needs of each case—no expense being incurred until hearing satisfactorily.

Particulars gladly sent and Tests are made at Aurists, Doctors' patients, Hospitals, or any of our addresses.

Medical Press Reports are interesting

10 MEDALS, 5 DIPLOMAS.

Supplied under National Health Insurance.

R. H. Dent
M. Inst. P. I.

ARDENTE LTD.—309 OXFORD ST., LONDON, W.1.
(Between Oxford Circus and Bond Street)
'Phones: Mayfair 1380/1718/0947

BIRMINGHAM CARDIFF BRISTOL EXETER EDINBURGH LEEDS GLASGOW MANCHESTER LEICESTER NEWCASTLE LIVERPOOL SOUTHAMPTON

PRODUCT OF THE OXO LABORATORIES

"LIVEROID"

BRAND

Preparation of Liver

for ANÆMIA

EQUIVALENT OF RAW LIVER — BETTER THAN LIVER EXTRACTS

Raw Liver contains the active principles applicable respectively to the treatment of

(a) ***Pernicious Anaemia;***
(b) ***Secondary and Haemorrhagic Anaemias;***
(c) ***Nutritional Macrocytic Anaemias.***

Many forms of Liver Extract, including those of the National Pharmacopoeias, contain only the Pernicious Anaemia principle and are unsatisfactory for the treatment of Secondary and Haemorrhagic Anaemias.

"Liveroid," the natural uncoagulated juice of raw liver, contains all the liver hormones combined with medicinal iron. It is therefore eminently suitable for the treatment of—

PERNICIOUS ANAEMIA
SECONDARY ANAEMIAS HAEMORRHAGIC ANAEMIAS
NUTRITIONAL MACROCYTIC ANAEMIAS

SUPPLIED IN BOTTLES, 3/11 and 6/6

OXO LIMITED, Thames House, London, E.C.4

PRODUCT OF THE OXO LABORATORIES

FORMERLY KNOWN AS **SPETON**

GYNOMIN

Regd. No. UK.609162 TRADE MARK BRAND

ANTISEPTIC AND PROPHYLACTIC

TABLET

MANUFACTURED IN ENGLAND

under an Order in respect of the Trade Mark 'SPETON' granted by the Comptroller-General of Patents, Designs, and Trade Marks.

GYNOMIN is the only contraceptive tablet manufactured from the original SPETON formula—known to the medical profession throughout the world for the past 25 years.

Samples and literature on request

Manufactured by

COATES AND COOPER, LTD.
94 CLERKENWELL RD. E.C.1

Tube of 12 Tablets. Stocked by all Pharmacists throughout the world.

The safe prescription during the observation period in all Gastric cases . . ,

DINNEFORD'S

pure fluid MAGNESIA

Bland, safe, and certainly most effective, it calms symptoms and enables a speedier diagnosis to be reached.

DINNEFORD and CO., LTD.
GREAT WEST ROAD, BRENTFORD, MIDDLESEX

DOCTORS PRESCRIBE!

the famous

SALMON ODY
BALL AND SOCKET TRUSS

Most scientific and reliable yet devised. Perfect support, comfort, resiliency. Single 30/- & 42/- Double 50/- & 63/-
Most of our clients are sent to us by Doctors
Write for Booklet

SALMON ODY LTD.
TRUSS MAKERS FOR 130 YEARS
74, NEW OXFORD ST., LONDON, W.C.1
'Phone: MUSeum 2313

BRITISH POSTGRADUATE MEDICAL SCHOOL

(UNIVERSITY OF LONDON)

Department of Surgery

A FORTNIGHT'S COURSE ON

OPERATIVE WAR SURGERY

will be given by

Mr. A. K. HENRY, M.B., M.Ch., F.R.C.S.,

consisting of six 2-hour sessions

on

Wednesdays, Thursdays and Fridays, from 2.30 to 4.30 p.m.,

commencing on

Wednesday, 28th August, 1940.

The course is strictly limited to 16 students and applications for admission to the course should be submitted to the Dean, British Postgraduate Medical School, Ducane Road, W.12.

The fee for the course will be 5 guineas.

LIPOLYSIN in OBESITY
Male (Cavendish) Female

AN EFFECTIVE, CLINICALLY SAFE THERAPY

Provides the ACTIVE hormones of glands the imbalance of which is a cause of fatty deposition—thyroid, anterior pituitary thymus and, in respective preparations, orchitic and ovarian substance. CONTAINS NO DINITROPHENOL. Tablets—bottles of 100 and 250. Ampoules—boxes of 12. Capsules—bottles of 50 and 120.

CAVENDISH CHEMICAL CO. (New York), LTD.
Oxford Works, Worsley Bridge Road, LONDON, S.E.26

LONDON HOSPITAL MEDICAL COLLEGE AND DENTAL SCHOOL

(UNIVERSITY of LONDON)

THE WINTER SESSION WILL OPEN ON TUESDAY, OCTOBER 1st

THE LONDON HOSPITAL serves the East End of London, and with eight hundred and ninety-one beds is the largest voluntary hospital in England.

The size of the Hospital necessitates a large number of resident medical officers. The opportunities which these appointments offer for obtaining clinical experience are invaluable.

THE MEDICAL COLLEGE is attached to the Hospital and is staffed by Professors of the University of London, in the subjects of Anatomy, Physiology, Bacteriology, Chemical Pathology, Morbid Anatomy and Medicine. The College contains a modern Museum of Pathology and a Library.

THE ORGANISATION of the London Hospital has been adapted to war conditions. The Hospital is now maintaining 500 beds. 350 beds are in use for ordinary patients, and a large proportion of urgent and acute cases are being admitted. 150 beds are reserved for Service sick and air-raid casualties and all Out-patient Clinics and the Maternity District are in full operation almost at their pre-war level. Other patients are transferred to the outlying hospitals in Sectors I and II **for which the London Hospital is now responsible**; the clinical facilities of these Hospitals are open to London Hospital Students.

THE PRE-CLINICAL SCHOOL, with staff and equipment, has been temporarily transferred to Cambridge. The teaching of Chemistry, Physics and Biology for the First M.B. Examination is undertaken by Queen Mary College, with which the London Hospital Medical College is associated. Queen Mary College is also temporarily transferred to Cambridge, and therefore the full pre-clinical curriculum is provided for students in Cambridge.

ENTRANCE SCHOLARSHIPS and prizes to the total value of £950 are awarded annually. Research Funds to the value of £113,000 permit of assistance being given to students and graduates engaged in medical research.

In the College building and on Hospital grounds there are an Athenæum and Dining Hall, a Gymnasium, a Fives Court, three Tennis Courts, a Rugby Practice Scrum, two Practice Wickets and two Squash Courts in the Students' Hostel. For those who wish to live in immediate proximity to the Hospital there is accommodation for seventy-five students in the Students' Hostel. The Athletic Ground of 13 acres at Hale End is within easy distance of the Hospital.

Further details may be obtained from the Dean, Dr. A. E. Clark-Kennedy, M.D., F.R.C.P., Physician to the Hospital and Fellow of Corpus Christi College, Cambridge, who is always pleased to meet students wishing to see the Hospital and College, and to whom application for admission should be made.

Turner-street, London, E.1.

ANÆSTHETIC COURSE

(for D.A. candidates, and others interested)

If sufficient demand a 2 to 3 week course, covering all branches of Anæsthesia, will be arranged at the end of September, consisting of several lectures at 5 P.M. and practical instruction in the daytime. Apply early for further information to the FELLOWSHIP OF MEDICINE, 1, Wimpole-street, London, W.1. (LANgham 4266)

F.R.C.S. & M.R.C.P. COURSES

CLINICAL COURSE (F.R.C.S.): Wednesdays, 5 P.M., September 4th, 11th, 18th, 25th. General Surgical cases. COMPREHENSIVE COURSE (F.R.C.S.): Royal Cancer Hospital, every morning, to October 11th. NEUROLOGY (M.R.C.P.): West End Hospital for Nervous Diseases, afternoons, September 9th to 20th.

Apply FELLOWSHIP OF MEDICINE, 1, Wimpole-street, London, W.1. (LANgham 4266)

Examining Board in England

BY THE
ROYAL COLLEGE OF PHYSICIANS OF LONDON
AND THE
ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Notice is hereby given that the following Examinations will commence on the dates stated below:—

PRE-MEDICAL EXAMINATION
(Chemistry, Physics, and Biology),
MONDAY, SEPTEMBER 16TH.

FIRST EXAMINATION
(Anatomy, Physiology, and Pharmacology),
MONDAY, SEPTEMBER 23RD.

FINAL EXAMINATION
(Pathology, Medicine, Surgery, and Midwifery),
WEDNESDAY, OCTOBER 2nd.

Candidates who have fulfilled the necessary conditions, and who desire to present themselves for Examination, must give notice in writing to the Secretary, Examination Hall, 8–11, Queen-square, London, W.C.1, at least twenty-one days before the date of the Examination, transmitting at the same time such certificates as may be required by the Regulations of the Board.

HORACE H. REW, Secretary.

For
SHORT WAVE THERAPY
Equipment
THERMORAY LIMITED
4, Bucklersbury, London, E.C.4

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards, according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. Telephone: Norwich 80.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

(University of London)

University Street, W.C.1.

WINTER SESSION commences TUESDAY, 1ST OCTOBER, 1940.

Scholarships and Prizes exceeding £1000 awarded annually, and numerous vacancies for House Appointments, also Senior Posts for Registrars, &c.

DENTAL SCHOOL DEPARTMENT
(NATIONAL DENTAL HOSPITAL, GREAT PORTLAND STREET, W.)

Recently reorganised and equipped on the highest standard of modern requirements.
Full particulars can be had on application to the Dean.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind.
Terms moderate. Apply to Resident Medical Superintendent.
Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)
MAGHULL (near LIVERPOOL)

FARMING and OPEN AIR OCCUPATION for PATIENT
A few vacancies in 1st and 2nd Class Houses.
FEES: 1st Class (men only) from £3 3s. per week upwards.
2nd Class (men and women) 32/- per week.

For further particulars apply: C. EDGAR GRISEWOOD, A.C.A.
Secretary, 20, Exchange Street East, Liverpool, 2

MENTAL NURSES
Also Fully Trained Nurses for
MEDICAL, SURGICAL,
45, BEAUMONT ST., W.1
'Phone: "WELBECK 6066"

MALE & FEMALE TRAINED — THE TEMPERANCE — NURSES CO-OPERATION
ESTABLISHED AT THIS ADDRESS 43 YEARS

MALE & FEMALE
all Cases, Male, Female, & Children
MATERNITY, FEVER, etc.
H. S. STURGESS, Secy.
'Grams: "ABSTAIN, LONDON"

Telephone: WELbeck 2728 Telegrams: "ASSISTIAMO, LONDON"
For MEDICAL, SURGICAL, and
MENTAL NURSES
Male or Female
THE NURSES' ASSOCIATION
In conjunction with the MALE NURSES' ASSN.
29, YORK ST., BAKER ST., LONDON, W.1
Mrs. MILLICENT HICKS, Superintendent W. J. HICKS, Secretary

PORTSMOUTH CITY MENTAL HOSPITAL

Accommodation is provided for the reception of PRIVATE PATIENTS of both sexes in three detached Villas, which are healthily and pleasantly situated in extensive grounds with sea views.

Charges from 3 guineas weekly, including all necessaries except clothing.—Apply to the Medical Superintendent and Resident Physician, THOMAS BEATON, O.B.E., M.D., F.R.C.P.

THE COPPICE, NOTTINGHAM.
HOSPITAL FOR MENTAL DISEASES.
President: The Right Hon. LORD BELPER.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted. Voluntary and Temporary Patients received. Occupational Therapy. For terms, &c., apply to the Medical Superintendent.

Telephone: 64117 Nottingham.

Sunnyside
Restorium
HASSOCKS, SUSSEX
For Convalescent Patients or those requiring restful holiday combined with Massage, electrical and other Physical treatment. Electric Lift and modern amenities. *Brochure from Medical Superintendent.*
(in association with fully licensed Downs Hotel). *Telephone:* 103.

CHISWICK HOUSE,
PINNER, MIDDLESEX.
Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

DOUGLAS MACAULAY, M.D., D.P.M.

THE GROVE HOUSE,
CHURCH STRETTON, SHROPSHIRE.
Private Home for Ladies mentally ill. Voluntary and Temporary Patients received.
Medical Superintendent: Dr. J. A. MCCLINTOCK.

STRETTON HOUSE,
Church Stretton, Shropshire.
ESTABLISHED IN 1853.
A PRIVATE HOME for the treatment of gentlemen suffering from Mental and Nervous illness, including the allied Disorders of Alcoholism and the Drug Habit. All types of early Mental and Nervous Cases are received without Certificates as Voluntary Patients under the provisions of the Mental Treatment Act, 1930. Bracing hill country. See "Medical Directory," p. 2358.—Apply to the Medical Superintendent. 'Phone 10 P.O., Church Stretton.

COURT HALL, KENTON, near EXETER
FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH
FOR EARLY AND CONVALESCENT CASES
Recreational Therapies are held daily by skilled Leaders
The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach.
There is also a charming house, **EBWORTHY, MANATON, DARTMOOR,** situated in 20 acres, 1100 ft. up for bracing moorland air.
Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P.
Telephones—STARCROSS 259 and TEIGNMOUTH 289

HAYDOCK LODGE,
NEWTON-LE-WILLOWS, LANCASHIRE.
For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism and Drug addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *'Phone:* Ashton-in-Makerfield 7311. *Tele. Address:* Street, Ashton-in-Makerfield.

CRICHTON ROYAL, DUMFRIES For NERVOUS AND MENTAL DISORDERS
Separate Villa for patients suffering from the effects of alcoholism and drug addiction. Every facility for complete investigation and individual treatment on the most modern lines. Fully equipped gymnasium, golf course, and indoor swimming pool. Specially trained occupational and recreational therapists. **Special Department for Insulin Therapy.** As the hospital is well endowed terms are exceptionally moderate, e.g., First Department from 3 guineas per week, Second Department, 2 and 2½ guineas per week. Voluntary and certified patients are received. Medical Certificates given anywhere in the British Isles are valid for admission of patients. *For prospectus, necessary forms, and further information apply to:—*
Physician Superintendent, **P. K. McCowan,** J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Tel. Dumfries 1119

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS,

NORTHAMPTON

FOR THE UPPER AND MIDDLE CLASSES ONLY.

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., M.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods: insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombieres treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

CHEADLE ROYAL HOSPITAL, Cheadle, Cheshire.

This REGISTERED HOSPITAL, with a SEASIDE BRANCH at Colwyn Bay, N. Wales, is for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL AND NERVOUS DISEASES.

The Hospital is governed by a COMMITTEE, appointed by the TRUSTEES of the Manchester Royal Infirmary.

In addition to the Main Buildings there are separate villas. Extensive grounds. Hard and grass tennis courts, cricket and croquet grounds, and a court for badminton. There are also wireless installations. Golf may be had within easy distance. Occupational Therapy.

VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS received.

The Hospital is nine miles from Manchester, 50 minutes by rail from Liverpool, and 3½ hours from London.

For terms and further particulars apply to the Medical Superintendent, who may be seen in Manchester BY APPOINTMENT. *Telephone: Gatley* 2231 (3 lines).

CAMBERWELL HOUSE

Telegrams: "PSYCHOLIA, LONDON." **33, PECKHAM RD., LONDON, S.E.5.** Telephone: Rodney 4242 (2 lines).

For the treatment of MENTAL DISORDERS.

Also completely detached Villas for Mild Cases, with private suites if desired. Voluntary Patients received. Twenty acres of Grounds. Hard and Grass Tennis Courts, Putting Greens, Bowls, Croquet, Squash Rackets, Recreation Hall with Badminton Court, and all indoor amusements, including Wireless and other Concerts, Occupational Therapy, Calisthenics, and Dancing Classes. X-ray and Actino-therapy, Prolonged Immersion Baths, Operating Theatre, Pathological Laboratory, Dental Surgery, and Ophthalmic Department. Chapel. **Shock and also modified Insulin Therapy.**

Senior Physician: Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff, and visiting Consultants.

An Illustrated Prospectus, giving fees which are strictly moderate, may be obtained upon application to the Secretary.

The Convalescent Branch is Hove Villa, Brighton, and is 200 feet above sea level.

THE COTSWOLD SANATORIUM

First opened in 1898 and rebuilt in 1925 on the Cotswold Hills seven miles from Cheltenham, for the Treatment of Pulmonary and all other forms of Tuberculosis. Aspect S.S.W., sheltered from North and East, elevation 800 feet. Pure bracing air. SPECIAL TREATMENT by artificial PNEUMOTHORAX (X-ray controlled). TUBERCULINS, and ULTRA-VIOLET RAYS is available when necessary without extra charge. X-RAY plant, Fully Equipped Dental Department, Electric Light Radiators, hot and cold basins and Wireless in all rooms. Up-to-date drainage. Full day & night Nursing Staff. **Terms: 5¼ to 8¼ Guineas a week inclusive.**

Med. Supt.: GEOFFREY A. HOFFMAN, B.A., M.B., T.C. Dub. *Asst. Phys.:* MARGARET A. HARRISON, M.B., B.S. Lond. *Cons. Laryngologist:* G. N. BARKER, F.R.C.S. Edin., D.L.O. *Cons. Dent. Surgeon:* GEORGE V. SAUNDERS, L.D.S.R.C.S. Lond. *Phone:* 81 & 82 Witcombe. Apply: *The Secretary, The Cotswold Sanatorium, Cranham, Gloucester. Telegrams:* "Hoffman, Birdlip."

PRIOR PLACE SANATORIUM

HEATHERSIDE, CAMBERLEY, SURREY.

FOR THE TREATMENT OF PULMONARY TUBERCULOSIS

Well situated on high ground and surrounded by pines and heather.
All rooms are fitted with electric light, wash basins with hot and cold water, and radiators.
X ray plant. Day and night nursing staff.

RESIDENT MEDICAL SUPERINTENDENT: Dr. H. O. BLANFORD, to whom application for admission can be made.

THE OLD MANOR SALISBURY

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS.

Extensive grounds. Detached Villas. Chapel. Garden and Dairy Produce from own farm. Terms very moderate.
CONVALESCENT HOME AT BOURNEMOUTH Detached Villas standing in 12 acres of ornamental grounds, with tennis courts, etc., which Voluntary, Temporary or Certified Patients may visit by arrangement for long or short period.
Illustrated Brochure on application to the Medical Superintendent. The Old Manor, Salisbury. Telephone: Salisbury 3216 and 3217.

TOR-NA-DEE SANATORIUM

Managing Director: DAVID LAWSON, M.D., F.R.S.E.

FOR THE TREATMENT OF PULMONARY TUBERCULOSIS AND ALLIED DISEASES

Medical Superintendent: R. Y. KEERS, M.D.(Edin.)

For prospectus apply to The Secretary, Tor-na-Dee, Murtle, Aberdeenshire Telephone: Cults 107

NORTHUMBERLAND HOUSE

GREEN LANES,

FINSBURY PARK, N.4

A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground facing Finsbury Park. Voluntary and Temporary Patients received without certification. Occupational Therapy, Psychotherapy, and other modern forms of treatment. Air-raid Shelters have been provided.
Telephone: Stamford Hill 2688. *Telegrams:* "SUBSIDIARY, LONDON."

Convalescent Home, KEARSNEY COURT, DOVER.
For further particulars apply to the MEDICAL SUPERINTENDENT.

SHAFTESBURY HOUSE

FORMBY-BY-THE-SEA Nr. LIVERPOOL

Specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen suffering from NERVOUS and MENTAL breakdown. Voluntary and certified patients received. Ladies also admitted as Temporary Patients without certification. Terms moderate. *Apply*, RESIDENT PHYSICIAN, who may be seen in Liverpool, by appointment. *Tel. No.* 8 *Formby.*

CALDECOTE HALL

NUNEATON
WARWICKSHIRE
('Phone: Nuneaton 241)

Residential treatment of

"Nervous Disorders" & Alcoholism

(Certifiable cases are not received)

This beautiful mansion situated in the heart of the country (less than two hours from London by L.M.S.R.) and surrounded by charming pleasure grounds in which games and outdoor occupational therapy are available is devoted to the treatment of Alcoholism and "Nerves" by psychotherapeutic and ancillary methods.

Illustrated Brochure and particulars obtainable from A. E. CARVER, M.D., D.P.M., Resident Medical Superintendent.

BROOKE HOUSE, CLAPTON

A PRIVATE HOME for the treatment of Nervous and Mental Disorders in both sexes. Situated in nine acres of Pleasure Grounds.
Voluntary, Temporary, and Certified Patients received.

For further particulars apply—
Dr. ERNEST ROLLINS, Resident Physician.
Tel.: Amherst 1642.

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. **Near BEDFORD**

For Mental Cases with or without Certificates.

Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

HOLLOWAY SANATORIUM

VIRGINIA WATER

A Registered Hospital for the Treatment of MENTAL DISORDERS of the EDUCATED CLASSES. Founded by THOMAS HOLLOWAY in 1885.

This Institution is situated in a beautiful and healthy locality within easy reach of London. It is fitted with every comfort. Patients can have Private Bedrooms and Special Nurses as well as the use of General Sitting Rooms, at moderate rates of payment. Voluntary Patients can be admitted.

There is a Branch Establishment at CANFORD CLIFFS, BOURNEMOUTH, where Patients can be sent for a change and be provided with all the comforts of a well-appointed home.

For Terms, apply to—
The RESIDENT MEDICAL SUPERINTENDENT, St. Ann's Heath, Virginia Water, SURREY

ALCOHOLISM

Drug Habits, and Nervous Disorders

25 minutes from London, situated in charming grounds and country, is a "home from home" for those seeking rest and treatment under medical supervision. Fees from 6 guineas. Illustrated brochure on application to the matron.

CHISLEHURST 451

OLD HILL HOUSE
CHISLEHURST, KENT.

CITY OF LONDON MENTAL HOSPITAL
Near DARTFORD, KENT.

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards.

FENSTANTON, at "FIVE DIAMONDS," Chalfont St. Giles, Bucks.

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (*See Medical Directory*, p. 2346.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

UNIVERSITY EXAMINATION POSTAL INSTITUTION
17, RED LION SQUARE, LONDON, W.C.1

Over 50 years' experience

POSTAL AND ORAL COACHING
FOR
ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (36 pages),
sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion-square, London, W.C.1. (Telephone: HOLborn 6313.)

Victoria Hospital for Children,
Tite-street, Chelsea, S.W.3.

APPOINTMENT OF SENIOR RESIDENT MEDICAL OFFICER (B1).

Applications are invited from registered Medical Practitioners for the appointment of Senior Resident Medical Officer (Male) to become vacant on 17th September, 1940. Applicants should have held a hospital appointment. Suitably qualified R Practitioners holding B1 or B2 appointments are invited to apply. Salary £200 per annum, with board, lodging, and washing.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 3rd September, 1940.

D. ST. JOHN BAMFORD, Secretary.

The Samaritan Free Hospital for WOMEN,
Marylebone-road, N.W.1.

Applications are invited from registered Medical Practitioners, Male and Female, including R Practitioners who now hold "A" posts, for the post of HOUSE SURGEON (B2) for a period of six months, commencing 15th September next. Salary at the rate of £100 per annum, with board, lodging, and laundry. Previous experience as House Surgeon essential.

Applications, stating age, accompanied by copies only of testimonials, should be sent to the Secretary at the Hospital not later than NOON Thursday, 5th September, 1940.

G. H. HAWKINS, Secretary.

University of London.

CHESTER BEATTY SCHOLARSHIP.

Applications are invited for the Chester Beatty Scholarship for the study of RADIOLOGY, value £400, for one year. Open to holders of the Academic Postgraduate Diploma in Medical Radiology of the University of London.

Applications must be received not later than Thursday, 31st October, 1940, by the Academic Registrar, University of London at Royal Holloway College, Englefield Green, Surrey, from whom further particulars should be obtained.

University of London.

The Senate invite applications for the University CHAIR OF ANATOMY tenable at St. Mary's Hospital Medical School. Salary £1000 a year.

Applications (ten copies) must be received not later than first post on Wednesday, 11th September, 1940, by the Academic Registrar, University of London, Royal Holloway College, Englefield Green, Surrey, from whom further particulars should be obtained.

Hospital of St. John and St. Elizabeth,
60, Grove End-road, N.W.8.

Applications are invited for the post of RESIDENT HOUSE PHYSICIAN (A) (Male). The post is recognised for the degree of M.D. London University. The appointment will be for six months and will commence on 1st October, 1940. Salary at the rate of £150 per annum with full board.

Applications, together with copies of three testimonials, should reach the undersigned by Monday, 2nd September.

Applicants will be required to attend a meeting of the Medical Committee on Tuesday, 3rd September, at 8.30 P.M.

F. DUDLEY HOBBS, B.A., Secretary.

The South London Hospital for Women,
Clapham Common, S.W.4.

Applications are invited from medical women for the undermentioned appointments:—

RESIDENT MEDICAL OFFICER for a period of twelve months from 1st September.

Applicants should have held house appointments. Salary according to experience. Minimum £150 per annum, with full residential emoluments.

HOUSE PHYSICIAN for a period of six months from 1st September. Salary at the rate of £100 per annum, with full residential emoluments.

Candidates are requested to call on members of the Hon. Medical Staff before Thursday, August 29th, by which date applications, stating age, nationality, qualifications with dates, and accompanied by copies of three recent testimonials, must reach the Secretary at the Hospital.

King Edward Memorial Hospital,
Mattock-lane, Ealing, W.13.

Applications are invited from registered Medical Practitioners (Male) for the appointment of a HOUSE PHYSICIAN (A) to become vacant in September, including R Practitioners within three months of qualification. The appointment will be for a period of six months. Salary at the rate of £150 per annum, with usual residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of two recent testimonials, should be sent to the undersigned as soon as possible.

R. A. MICKELWRIGHT, House Governor.

14th August, 1940.

London County Council.

TEMPORARY ASSISTANT DISTRICT MEDICAL OFFICER REQUIRED FOR DUTY IN (1) S.E. FULHAM, (2) N.E. FULHAM, AND (3) TOOTING.

Provisional annual salaries:—

(1) S.E. FULHAM—£175.
(2) N.E. FULHAM—£350.
(3) TOOTING—£300.

Persons appointed required to reside in or near district.

Application form obtainable (stamped addressed foolscap envelope necessary) from Medical Officer of Health, Staff Division (1), County Hall, S.E.1, returnable by 7th September, 1940.

Canvassing disqualifies.

Princess Elizabeth of York Hospital
FOR CHILDREN,
Shadwell, London, E.1.

Appointment of RESIDENT HOUSE PHYSICIAN (B2) at Country Branch, Bayford, Herts.

Applications are invited from registered Medical Practitioners who now hold A posts for the appointment of Resident House Physician to become vacant on 1st October, 1940. Applicants should have held previous house appointments. If held by R Practitioner, the appointment will be limited to six months. Salary according to experience and qualifications, but not less than £150 p.a.

Applications, stating age, nationality, qualifications, with dates, experience and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 7th September, 1940.

F. J. WILLIAMS, Deputy Secretary.

King Edward Memorial Hospital, Ealing.

Owing to the absence of Members of the Honorary Medical Staff on War service, additional Assistance is required in the EAR, NOSE, AND THROAT DEPARTMENT.

Applications are invited from Consultants and particulars may be obtained from the undersigned.

R. A. MICKELWRIGHT, House Governor.

9th August, 1940.

Miller General Hospital, Greenwich High-road, S.E.10.

Applications are invited from registered Medical Practitioners (Male) for the appointments (A) of HOUSE PHYSICIAN and HOUSE SURGEON, which become vacant on 1st October, 1940, for a period of six months. Salary at the rate of £100 per annum, with full residential emoluments.

Form of application can be obtained from the undersigned, and must be returned not later than 10th September, 1940.

E. MARES, Secretary.

Borough of Heston and Isleworth.

TEMPORARY ASSISTANT MEDICAL OFFICER.

Applications are invited from registered Medical Practitioners for the post of Temporary Assistant Medical Officer. A public health degree or diploma is desirable.

The duties will be mainly in connexion with the Maternity and Child Welfare and the School Medical Services, together with such other duties as the Medical Officer of Health may direct.

The salary will be at the rate of £500 per annum, rising by increments of £25 per annum to £700. If the successful candidate takes up duty before the 1st October, 1940, the first increment will be paid from 1st April, 1941, but otherwise the first increment will not be paid until 1st April, 1942. The appointment is for a period of twelve months, but may be extended and is terminable by one month's notice.

Forms of application may be obtained from the Medical Officer of Health, 92, Bath-road, Hounslow, and completed applications, accompanied by not more than three recent testimonials, and endorsed "Assistant Medical Officer," should be submitted to the undersigned not later than 30th August, 1940.

HAROLD SWANN, Town Clerk.

Council House, Hounslow.

City and County of Bristol.

DEPARTMENT OF PUBLIC HEALTH.

APPOINTMENT OF ASSISTANT TUBERCULOSIS OFFICER AND RESIDENT MEDICAL OFFICER AT FRENCHAY PARK SANATORIUM (Female).

Applications are invited from registered Female Practitioners for the post of Assistant Tuberculosis Officer and Resident Medical Officer at Frenchay Park Sanatorium, Bristol. The successful applicant will be required to reside at Frenchay Park Sanatorium.

The salary at the rate of £500, rising by £50 to £700 per annum, including the value of residential emoluments valued at £125 per annum.

Candidates must have special experience in tuberculosis and hold a Diploma in Public Health.

The successful candidate will be required to contribute under the Local Government and Other Officers' Superannuation Act, for which purpose she will be required to undergo a medical examination.

Application forms, together with conditions of employment, may be obtained from the undersigned, to whom they must be returned not later than the 30th August, 1940.

R. H. PARRY, M.D., Medical Officer of Health.

August, 1940, 40, Prince-street, Bristol, 1.

Cumberland Infirmary. (200 Beds.)

Applications are invited from registered Medical Practitioners (including R Practitioners within three months of qualification) for the following resident posts to become vacant on the 1st October next:—

HOUSE PHYSICIAN (A) (Male).

Two HOUSE SURGEONS (A) (Male).

HOUSE SURGEON to SPECIAL DEPARTMENTS (A) (Male).

If held by an R Practitioner the appointment will be limited to six months.

Salary is at the rate of £160 per annum, with board, &c.

Applications, on forms obtainable from the undersigned, together with copies of not more than three testimonials, to be received not later than Tuesday, the 3rd September, 1940.

J. S. RIPPIER, Secretary-Superintendent.

Carlisle, 20th August, 1940.

Rochdale Infirmary and Dispensary, LANCS. (118 Beds.)

"A" APPOINTMENT.

Applications are invited from registered Medical Practitioners (Male and Female) for the appointment of SECOND HOUSE SURGEON (A), including R Practitioners within three months of qualification. If held by an R Practitioner, appointment will be for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

W. WYNNE, Secretary.

Rochdale.

Grosvenor Sanatorium, Ashford, Kent.

APPOINTMENT OF A HOUSE PHYSICIAN (A).

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of a House Physician (A) to become vacant on September 1st. If held by an R Practitioner the appointment will be limited to six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

B. ROBERTS, Medical Superintendent.

Grosvenor Sanatorium, Ashford, Kent.

Nottinghamshire County Council.

EMERGENCY HOSPITALS.

Applications are invited from registered Medical Practitioners (Male), including R Practitioners within six months of qualification, for seven appointments as HOUSE SURGEONS (A) at the undermentioned Hospitals:—

KILTON HILL COUNTY HOSPITAL, WORKSOP	3
COUNTY EMERGENCY HOSPITAL, MANSFIELD	2
BASFORD COUNTY EMERGENCY HOSPITAL, BULWELL, NOTTINGHAM	1
COUNTY EMERGENCY HOSPITAL, NEWARK	1

If held by R Practitioners appointments will be limited to six months, otherwise they will be for a period of six months in the first instance.

The salary for each appointment will be £200 per annum, with full residential emoluments or cash equivalent.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to me not later than 5th September, 1940.

K. TWEEDALE MEABY, Clerk of the County Council.

Shire Hall, Nottingham, 20th August, 1940.

East Suffolk and Ipswich Hospital. (380 Beds. 8 Residents.)

Applications are invited from registered Medical Practitioners (including R Practitioners within three months of qualification) for the appointment of HOUSE SURGEON (A) to the EAR, NOSE, AND THROAT and OPHTHALMIC DEPARTMENTS to become vacant on 30th September. Appointment will be for six months. Salary at the rate of £144 per annum, with full residential emoluments. Hospital is recognised for post-graduate study for Diplomas of D.L.O. and D.O.M.S.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to the undersigned.

ARTHUR GRIFFITHS, Secretary.

The Hospital, Ipswich, 24th August, 1940.

Royal South Hants and Southampton HOSPITAL. (319 Beds.)

APPOINTMENT OF A HOUSE SURGEON.

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of a House Surgeon (A) to become vacant on 30th September, 1940, including R Practitioners within six months of qualification, for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 5th September, 1940.

EDWARD L. WIRGMAN, House Governor and Secretary.

Royal South Hants and Southampton HOSPITAL. (319 Beds.)

APPOINTMENT OF RESIDENT SURGICAL OFFICER (B1).

Applications are invited from registered Medical Practitioners for the appointment of Resident Surgical Officer to become vacant on 30th September, 1940.

Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding Diploma of F.R.C.S. Suitably qualified R Practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £300 per annum.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 5th September, 1940.

EDWARD L. WIRGMAN, House Governor and Secretary.

Huddersfield Royal Infirmary. (321 Beds.)

Male CASUALTY OFFICER (B2) required to commence duty on September 18th, 1940.

Salary £200 per annum, with board, residence, and laundry. Appointment for six months, subject to renewal for a similar period. If held by an R Practitioner the appointment will be limited to six months. The Hospital is officially recognised for the surgical practice required of non-members before admission to the Final Fellowship Examination of the Royal College of Surgeons of England.

The post of Casualty Officer is next in seniority to that of Resident Surgical Officer.

Applications, with copies of three recent testimonials, to be addressed to the undersigned immediately.

H. J. JOHNSON, General Superintendent and Secretary.

Worcestershire County Council.

THE WORCESTERSHIRE KING EDWARD VII MEMORIAL SANATORIUM, KNIGHTWICK, Near WORCESTER.

Applications are invited from duly registered Medical Practitioners (Male or Female—single) for the joint (temporary) appointments of ASSISTANT COUNTY TUBERCULOSIS OFFICER and RESIDENT MEDICAL OFFICER of the Sanatorium, which has 86 Beds and is administered by a Voluntary Organisation.

The applicant should have had at least three years' experience in the practice of his profession, together with experience in the diagnosis and treatment of tuberculosis.

The Sanatorium is provided with the necessary forms of modern treatment, including X-ray apparatus.

By arrangement with the Worcestershire County Council the officer appointed as Resident Medical Officer will act as part-time Tuberculosis Officer for the Worcestershire County Council and the duties will include Dispensary work.

The officer appointed will be responsible to the Chief Tuberculosis Officer both as Resident Medical Officer and as Assistant Tuberculosis Officer.

A separate suite of rooms will be provided at the Sanatorium.

The salary will be at the rate of £500 per annum, together with board, lodging, and attendance. A car allowance of £100 per annum will also be paid.

Applications, on forms to be obtained from the Public Health Department, County Buildings, Worcester, must be received not later than the 29th August, 1940.

Canvassing in any form will disqualify.

C. H. BIRD,
Clerk of the County Council, Shirehall, Worcester.

J. P. HOLDER, Secretary to the Sanatorium.
12, Beech-avenue, Worcester. (R185]

City of Leicester.

ISOLATION HOSPITAL AND SANATORIUM.

DEPUTY MEDICAL SUPERINTENDENT (B1).

Applications are invited from registered Medical Practitioners (Male) for the post of Deputy Medical Superintendent to become vacant on 1st October, 1940.

Applicants should have held house appointments and have had previous experience in Infectious Diseases or Pulmonary Tuberculosis.

Suitably qualified R Practitioners holding B2 or B1 appointments are invited to apply.

Salary £400 per annum (plus emoluments valued at £150 per annum), increasing by annual increments of £50 per annum to £600 per annum. The appointment in the first instance is for a period of 2 years and is terminable by three calendar months' notice on either side. The post is designated under the Local Government Superannuation Act, 1937.

Application form, which can be obtained from the undersigned, should be returned completed, accompanied by copies of three recent testimonials, not later than 31st August.

E. K. MACDONALD, Medical Officer of Health.
Health Offices, Grey Friars, Leicester, August, 1940.

Doncaster Royal Infirmary.

Applications are invited from registered Medical Practitioners (Male) for the appointment of SENIOR HOUSE PHYSICIAN (B.2.) including R practitioners who now hold A post. If held by an R practitioner the appointment will be limited to six months. Salary is at the rate of £250 per annum, with usual emoluments. Applications, together with copies of two recent testimonials, should be forwarded to the undersigned immediately.

R. LANCASTER, Secretary-Superintendent.

Free Eye Hospital, Southampton.

Applications are invited from registered Medical Practitioners, Male or Female, for the appointment of HOUSE SURGEON (A) to become vacant immediately, including R Practitioners within three months of qualification. The appointment to be for a period of six months.

Salary at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent to the undersigned by an early date.

E. T. KEMP, Secretary.

Exeter City Mental Hospital.

The Visiting Committee invite applications for the appointment of ASSISTANT MEDICAL OFFICER (Male) (B1) at a salary of £400 per annum, rising by annual increments of £25 to £500 per annum, with furnished apartments suitable for a married assistant, board, attendance, and laundry, valued at £150 per annum; £50 per annum will be paid in addition if the successful candidate has a Diploma in Psychological Medicine, or when he obtains the same. The appointment is subject to deductions under the Asylum Officers' Superannuation Act Post-graduate experience in a General Hospital desirable.

Forms of application and further particulars may be obtained from my office, 10, Southernhay West, Exeter.

Applications, endorsed "Assistant Medical Officer," together with copies of not more than three recent testimonials, must reach me not later than the first post on Saturday, 31st August, 1940.

C. J. NEWMAN,
Town Clerk and Clerk to the Visiting Committee.

Hull Royal Infirmary.

Applications are invited from registered Medical Practitioners (Male), including R Practitioners within three months of qualification, for the post of—

(1) CASUALTY OFFICER (A), vacant now. If held by an R Practitioner the appointment will be for a period of six months. Salary £150 per annum.

Applications are also invited for the following posts:—

(2) HOUSE SURGEON (B2) to the OPHTHALMIC and EAR, NOSE, AND THROAT DEPARTMENTS, vacant now. The post is recognised for the D.O.M.S. and D.L.O. examinations. Salary £150 per annum.

(3) HOUSE PHYSICIAN (B2) at the SUTTON BRANCH HOSPITAL, vacant September 7th. The post is recognised for the London M.D. examination. Salary £160 per annum.

(4) HOUSE SURGEON (B2) at the SUTTON BRANCH HOSPITAL, vacant August 31st. The post is recognised for the F.R.C.S. and London M.S. examinations. Salary £180 per annum.

R Practitioners who hold A posts may apply for post (2), (3), or (4). If an R Practitioner is appointed the appointment will be limited to six months.

Applications, stating age, qualification with dates, and nationality, and accompanied by copies of recent testimonials, should be sent to the undersigned.

R. J. CARLESS, House Governor.

Rotherham & District General Hospital.

(140 Ordinary and 70 War Emergency Beds.)

CASUALTY HOUSE SURGEON (A).
HOUSE PHYSICIAN (A).

Applications are invited from registered Medical Practitioners (Male) for the above appointments, to become vacant on the 20th September, including R Practitioners within three months of qualification. If held by an R Practitioner the appointment will be for a period of six months. Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

T. H. FLETCHER, Secretary-Superintendent.

Royal Manchester Children's Hospital,

PENDLEBURY, Near MANCHESTER.
(232 Beds.)

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of a HOUSE SURGEON (A), to become vacant on 30th September, 1940.

If held by an R Practitioner the appointment will be for a period of six months.

Salary is at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than Thursday, 29th August, 1940.

By Order,
H. HEARDMAN, Secretary.

The Duchess of York Hospital for

BABIES, MANCHESTER. (80 Beds.)

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of SENIOR RESIDENT MEDICAL OFFICER (B2) to become vacant on the 1st October, 1940, including R Practitioners who now hold A posts. The appointment is for six months and the salary at the rate of £175 per annum with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 2nd September, 1940. LOUISE GILLESPIE, Secretary.

Royal Isle of Wight County Hospital,

RYDE.

APPOINTMENT OF A HOUSE SURGEON (A).

Applications are invited from registered Medical Practitioners, Female, for the appointment of a House Surgeon (A) to become vacant on September 30th next. The appointment will be for six months. Salary at the rate of £140 a year, with board, residence, and laundry. As this is the senior post, previous surgical experience is advisable.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than September 9th.

A. S. GORDON, Secretary.

Royal Isle of Wight County Hospital,

RYDE.

APPOINTMENT OF A HOUSE PHYSICIAN AND CASUALTY OFFICER (A).

Applications are invited from registered Medical Practitioners, Female, for the appointment of a House Physician (A) and Casualty Officer, to become vacant on September 30th next. The appointment will be for six months.

Salary at the rate of £130 a year, with board, residence, and laundry.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than September 9th.

A. S. GORDON, Secretary.

The Warwickshire and Coventry Joint COMMITTEE FOR TUBERCULOSIS.

KING EDWARD VII MEMORIAL SANATORIUM, HERTFORD HILL, near WARWICK.

Applications are invited for the post of JUNIOR ASSISTANT MEDICAL OFFICER (A) (Man or Woman) at the Memorial Sanatorium, near Warwick, of 225 Beds.

The salary will be at the rate of £250 per annum, with board, lodging, and laundry in addition, and the successful candidate will be appointed for six months.

There are three other Medical Officers at the Sanatorium.

Applications, with copies of testimonials, should be forwarded direct to the Medical Superintendent at the Sanatorium, to reach him by not later than Thursday, the 5th September, 1940.

L. EDGAR STEPHENS, Clerk of the Joint Committee.

Shire Hall, Warwick, 19th August, 1940.

District Infirmary, Ashton-under-Lyne.

(200 Beds, mainly Surgical.)

APPOINTMENT OF RESIDENT CASUALTY OFFICER (B2).

Applications are invited from registered Medical Practitioners for the appointment of Resident Casualty Officer (B2) to become vacant immediately, including R Practitioners who now hold "A" posts. If held by an R Practitioner appointment will be limited to six months.

The salary is at the rate of £180 per annum, with full residential emoluments.

APPOINTMENT OF A HOUSE SURGEON (A).

Applications are invited from registered Medical Practitioners, Male and Female, for the appointment of a House Surgeon (A) to become vacant immediately. If held by an R Practitioner, appointment will be limited to six months.

Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

FRANK OLIVER, General Superintendent and Secretary.

Birmingham and Midland Eye Hospital,

Church-street, BIRMINGHAM, 3.

Applications are invited for the post of SURGICAL REGISTRAR (B1) to the Hospital.

Candidates must have had not less than two years' experience in Ophthalmic work, and should have held a resident post in an Ophthalmic Hospital for at least one year. Suitably qualified R Practitioners holding B2 or B1 appointments are invited to apply.

Appointment will be for one year, with eligibility for reappointment.

Salary at the rate of £250 per annum, which includes payment for attendances at the Branch Hospital. Particulars of duties, &c., may be obtained on application.

Applications, together with copies of testimonials, to be sent in not later than Wednesday, 4th September, 1940, addressed to the undersigned. F. M. HAUGHTON, House Governor.

The Southampton Children's Hospital AND DISPENSARY FOR WOMEN.

APPOINTMENT OF A RESIDENT MEDICAL OFFICER.

Applications are invited from registered Medical Practitioners, Female, for the appointment of a Resident Medical Officer to become vacant on August 31st.

Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than August 27th, 1940. ELLA K. MATTHEWS, Secretary.

The Mount Vernon Hospital, NORTHWOOD.

APPOINTMENT OF SENIOR HOUSE OFFICER (B1).

Applications are invited from registered Medical Practitioners for the appointment of Senior House Officer to become vacant on 1st October, 1940.

Applicants should have had experience in Cancer work and Blood Transfusion. Suitably qualified R Practitioners holding B2 or B1 appointments are invited to apply. The salary is at the rate of £350 per annum, with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 31st August next.

W. J. MORTON, House Governor.

Kent County Ophthalmic and Aural HOSPITAL, MAIDSTONE. (150 Beds.)

Appointment of HOUSE SURGEON to the EAR, NOSE, AND THROAT DEPARTMENT (B2).

Applications are invited from registered Medical Practitioners for the above post which is now vacant, including R Practitioners holding "A" posts, when appointment will be limited to six months. Applicants should have experience of the speciality. The appointment will be for an initial period of six months.

Salary at the rate of £300 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned without delay.

JOHN W. STRICKLAND, Secretary.

Administrative County of Essex. ESSEX COUNTY HOSPITAL, BROOMFIELD.

APPOINTMENT OF ADDITIONAL MEDICAL OFFICERS (B1) AND (B2).

The County Council of the Administrative County of Essex invite applications for two vacant appointments at the Essex County Hospital, Broomfield, for the treatment of pulmonary and surgical tuberculosis in men, from registered Medical Practitioners.

Applicants for the first appointment, viz. that of third Assistant Medical Officer, should have held house appointments and have had experience in the treatment of tuberculosis, particularly surgical tuberculosis, in hospital or sanatorium. Suitably qualified practitioners, including those R Practitioners holding B2 and B1 appointments, are invited to apply. Salary £350, rising, subject to satisfactory service, by annual increments of £25, to £425 per annum, together with the usual indoor emoluments, valued at £160 per annum.

Applicants for the second appointment, viz. that of Junior Resident Medical Officer, should include applications from R Practitioners who hold A posts and who have not completed a five-months' tenure of those posts. The appointment would normally be for a period of one year, but if the successful applicant is an R Practitioner, the appointment will be limited to six months. Salary £250 per annum, together with the usual indoor emoluments valued at £160 per annum.

The successful applicants will be required to pass a medical examination, and in the case of the former appointment, to contribute to the appropriate Superannuation Fund. Both appointments will be subject to the Council's Sick Pay Rules and Regulations, a copy of which will be forwarded upon application. Applications on the prescribed forms obtainable from the undersigned, should be addressed to me, in an envelope marked "Appointment of Medical Officers," and delivered at the County Hall, Chelmsford, not later than 10 a.m. on Thursday, the 5th day of September, 1940.

E. S. HOLCROFT, Clerk of the County Council.

County Hall, Chelmsford, 20th August, 1940.

East Sussex County Council.

SOUTHLANDS HOSPITAL (E.M.S.), SHOREHAM-BY-SEA, SUSSEX.

APPOINTMENT OF RESIDENT ASSISTANT MEDICAL OFFICER (B1).

Applications are invited from registered Medical Practitioners for the appointment of Resident Assistant Medical Officer to become vacant on 15th September, 1940. Applicants should have held house appointments and have had medical, obstetrical, and anæsthetics experience. Suitably qualified R Practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £400 per annum, with board, lodging, and laundry.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the Medical Superintendent not later than 3rd September, 1940.

H. S. MARTIN, Clerk of the County Council.

Sussex Eye Hospital,

Eastern-road, BRIGHTON.

(48 Beds.)

Applications are invited from registered Medical Practitioners for the appointment of a HOUSE SURGEON (B2), vacancy immediately, including R Practitioners who now hold "A" posts. Salary is at the rate of £150 per annum, with full residential emoluments. If held by an R Practitioner, the appointment is limited to six months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

PERCY F. SPOONER, Assistant Secretary.

County Borough of Swansea. PUBLIC HEALTH DEPARTMENT.

HILL HOUSE ISOLATION HOSPITAL.

RESIDENT MEDICAL OFFICER (MALE OR FEMALE).

Applications are invited from registered Medical Practitioners of either sex for the post of Resident Medical Officer (A). Previous experience not essential. The appointment is limited to one year, will not be renewable, and will be terminable at any time within the year by one month's notice on either side.

Salary £200 per annum, with board, residence and laundry.

Applications, stating age and qualifications, with copies of not less than three recent testimonials, should be sent to the Medical Officer of Health, The Guildhall, Swansea, not later than 6th September, 1940.

Southend-on-Sea General Hospital.

Applications are invited from registered Medical Practitioners, Male, for the appointment of a HOUSE SURGEON (A) to become vacant on 1st September, 1940, including R Practitioners within three months of qualification. If held by an R Practitioner appointment will be for a period of six months. Salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 28th August, 1940.

P. H. CONSTABLE, Secretary.

Redruth Hospital, Cornwall.

HONORARY SURGEON required. Applicants should hold M.S. or F.R.C.S. and must reside in district.

Applications, stating age, with two testimonials, must reach Secretary before September 10th.

Applications are invited for the services of a Full-time MEDICAL OFFICER in a large engineering works in the Midlands, employing 7000 people. A minimum salary of £650 per annum will be paid. Preference will be given to candidates who have had experience in a large general hospital and who hold the D.P.H. or equivalent qualification.—Address, No. 724, THE LANCET Office, 7, Adam-street, Adelphi, W.C.2.

Full-time Medical Officer required for duration of war.

Engineering firm in Coventry employing 4000 to 5000 people in two factories.

Salary £650 per annum.

Applications to—

Address, No. 727, THE LANCET Office, 7, Adam-street, Adelphi, W.C.2.

Walthamstow, best part. Freehold RESIDENCE, suit Dr. Waiting and consulting rooms, two reception, five bedrooms, bathroom. Garage, garden. £1000. Part cash.—BEKEN & STOKES, 213, Hoe-st., E.17. Tel.: Key 4211.

RADIUM: You can hire up to 100 mgms. of radium element made up to any required specification, for the moderate fee of £5 5s., from—J. C. GILBERT LTD., 54, Finsbury Pavement, E.C.2. Tel.: NAT 2322.

Harley Street and District.—A number of excellent CONSULTING ROOMS are available for full and part-time use at moderate rents. Particulars on application.—ELGOOD & Co., 1, Bentinck Street, Welbeck Street, W.1. Welbeck 8974.

Typewriting.—Specialists in Typing Medical and Scientific Papers, Theses, Books. Proof-reading, Indexing.—MARGARET WATSON, LTD., 25, Palace-chambers, Bridge-street, S.W.1. WHItehall 3838.

C. E. BEDFORD & CO., LTD.

Surveyors, Auctioneers, and Estate Agents

10, WIGMORE STREET, CAVENDISH SQUARE, W.

PROFESSIONAL HOUSES AND CONSULTING ROOMS.

Telephone: LANGHAM 3927-3928.

ESTABLISHED 1845.

ELLIOTT, SON AND BOYTON

(H. C. ROWE, F.S.I.),

86/87, WIMPOLE STREET, W.1,

Estate Agents, Auctioneers, and Surveyors,

are the BEST LOCAL AGENTS for HOUSES and CONSULTING ROOMS in the Harley, Wimpole, Queen Anne, and other Streets in the Cavendish-square district. Valuations for all purposes.

Telephone: WELBECK 8367 (4 lines).

BOVRIL MEDICAL AGENCY, LTD.

ALDINE HOUSE, 10-13, BEDFORD STREET, STRAND, LONDON, W.C.2

Telegrams: BOVMEDICAL, LESQUARE, LONDON. Managing Director: F. M. THEW. *Telephone:* TEMPLE BAR 1616 (3 lines)

SCOTTISH BRANCH: 13 MELVILLE STREET, EDINBURGH, 3.

The maximum commission payable on the sale of any Practice or Partnership in Great Britain, placed exclusively in the hands of this Agency, is £50 (Fifty Pounds), which sum covers goodwill, drugs, surgery fittings, fixtures and furniture, instruments and book debts, but not house property. Schedule of Terms will be forwarded on application. Locum Tenens and Assistants supplied to Principals at short notice, without charge. Full particulars of Practices and Partnerships for sale will be sent immediately to interested applicants on receipt of a note of their requirements.

THE HIGHEST FORM OF PRAISE

The endorsement of its products by the Medical Profession is the highest tribute which any firm of Contraceptive Specialists could receive. And the most practical form that such endorsement can take is the consistent recommendation of that firm's products to patients seeking advice on matters of Birth Control. Burge, Warren & Ridgley take considerable pride, therefore, in the fact that so vast a proportion of the sales of their Contraceptives is definitely traceable to professional advice.

BURGE, WARREN & RIDGLEY, LTD.

91-92, Saffron Hill, London, E.C.1

Telephone: HOLborn 0050.

Telegrams: "Drugsund, Smith, London."

ESTABLISHED 1850.

A HANDMAID to the HOSPITALS

Your Help is Needed by the

ROYAL SURGICAL AID SOCIETY

which Supplements the Work of the

Hospitals

by Providing the Afflicted Poor with

SURGICAL APPLIANCES

of every description, upon the certificate of a Surgeon and the Recommendations of Subscribers.

Over 1,530,000 Appliances already supplied.

Annual Subscription of £1 1 0
or Life Subscription of £10 10 0

Entitles to Four Recommendations per Annum.

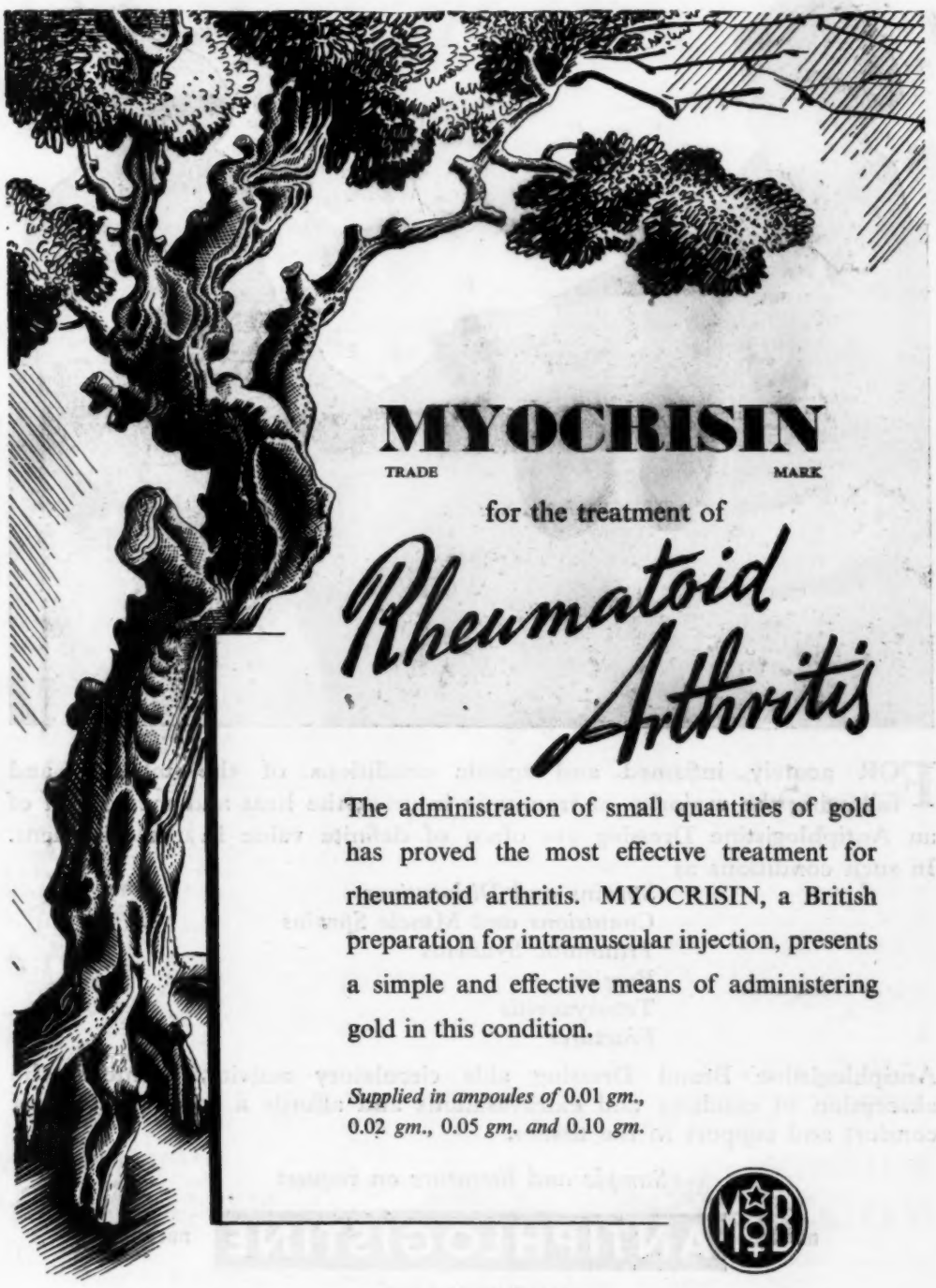
The number of recommendations increasing in proportion to the amount of subscription or donation.

Patron: **HIS MAJESTY THE KING.**

Head Office:

SALISBURY SQUARE, FLEET STREET, E.C.4

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Temporary Editorial Office, 26, Temple Street, Aylesbury, Bucks (Aylesbury 315).
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, August 24, 1940.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.



MYOCRISIN

TRADE MARK

for the treatment of

Rheumatoid Arthritis

The administration of small quantities of gold has proved the most effective treatment for rheumatoid arthritis. MYOCRISIN, a British preparation for intramuscular injection, presents a simple and effective means of administering gold in this condition.

Supplied in ampoules of 0.01 *gm.*, 0.02 *gm.*, 0.05 *gm. and* 0.10 *gm.*

M&B

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD., DAGENHAM

FOR acutely inflamed and spastic conditions of the muscles, and following the majority of traumatic injuries, the heat and medication of an Antiphlogistine Dressing are often of definite value in the treatment. In such conditions as

Sprains and Dislocations
Contusions and Muscle Sprains
Traumatic Synovitis
Bursitis
Tenosynovitis
Fractures

Antiphlogistine Brand Dressing aids circulatory activity, promotes the absorption of exudates and extravasations and affords a good measure of comfort and support to the tissues.

Sample and literature on request

BRAND **ANTIPHLOGISTINE** DRESSING

MADE IN ENGLAND

THE DENVER CHEMICAL MFG. COMPANY

12, Carlisle Road . . . . . London, N.W.9